



Strand Associates, Inc.[®]

910 West Wingra Drive

Madison, WI 53715

(P) 608-251-4843

September 11, 2018

Ms. Jen Hurlbaas
Madison Metropolitan Sewerage District
1610 Moorland Road
Madison, WI 53713-3398

Re: Soil and Groundwater Sampling Results
Northeast Interceptor–Truax Extension Relief Project
Madison Metropolitan Sewerage District (MMSD)

Dear Jen,

On July 16 and 17, 2018, Strand Associates, Inc.[®] (Strand) collected soil and groundwater samples along the proposed alignment of the Northeast Interceptor–Truax Extension. The sampling was requested by MMSD after investigations by others detected perfluorinated compounds (PFCs) in the shallow soil and groundwater at the nearby Truax Field Air National Guard Base. The PFC contamination at the Air National Guard Base was reported to the Wisconsin Department of Natural Resources (WDNR) in March 2018. Sampling by the City of Madison (City) has also detected PFCs in groundwater samples collected from City Well 15. Because the proposed alignment of the Northeast Interceptor is between the Air National Guard Base and City Well 15, soil and groundwater sampling along the proposed alignment was completed to determine if construction excavation and dewatering might generate soil and water that is contaminated with PFCs. See Figure 1 for the location of Truax Field, City Well 15, and the sampling locations along the proposed alignment of the Northeast Interceptor. For additional information about the Truax Field Air National Guard Base investigation, refer to the Amec Foster Wheeler report, *Draft Report, FY16 Phase 1 Regional Site Inspections for Perfluorinated Compounds, Truax Field Air National Guard Base, Madison, Wisconsin*, dated March 27, 2018. A summary of City Well 15 groundwater analytical results can be obtained from the City Water Utility.

Summary of Soil and Groundwater Sampling

Four environmental soil borings (B7, B9, B11, and B13) were completed along the proposed alignment of the Northeast Interceptor (see Figure 1). Soil samples were collected continuously at each boring and samples were field screened with a photoionization detector (PID). Soil samples were collected to the depth of 20 feet at borings B7 and B9, to the depth of 36 feet at boring B11, and to the depth of 18 feet at boring B13. One soil sample from each boring was submitted for laboratory analysis of volatile organic compounds (VOCs) and the following PFCs: Perfluorooctanesulfonic acid (PFOS), Perfluorooctanoic acid (PFOA), Perfluorobutanesulfonic acid (PFBS), Perfluoroheptanoic acid (PFHpA), Perfluorohexanesulfonic acid (PFHxS), Perfluorononanoic acid (PFNA). The Air National Guard Base investigation analyzed soil and groundwater samples for these same six PFCs.

After soil sampling was completed, a 1-inch-diameter polyvinyl chloride (PVC) temporary monitoring well was installed in each boring. The wells were installed with a sand filter pack around a 10-foot-long well screen, developed, and sampled. Each temporary well was abandoned after groundwater samples were collected. Well screen intervals (depth of water sample collection) were: B7 at 28.5 to 38.5 feet; B9 at 28.5 to 38.5 feet; B11 at 30 to 40 feet; B13 at 11 to 21 feet. One groundwater sample from each temporary well was submitted for laboratory analysis of VOCs and the six PFCs.

LTH:sjl\IS\MAD\1000-1099\1021\021\Designs-Studies-Reports\Environmental\Investigation of Interceptor Route\2018-08-15 Letter.docx

Ms. Jen Hurlebaus
Madison Metropolitan Sewerage District
Page 2
September 11, 2018

Field Observation

The soils observed are summarized on the attached boring logs. Soil sample PID field screening results are shown on the boring logs and also summarized in the attached tables. The PID meter is a screening tool that detects volatile compounds in the soil. The field screening results showed consistently high PID readings, indicating likely volatile contaminants in the soil.

The approximate water table depths observed in each temporary well at the time of water sampling were 19 feet at B7, 18 feet at B9, 31 feet at B11, and 19 feet at B13.

Soil Analytical Results

No significant concentrations of VOCs or PFCs were detected in the soil samples analyzed by the laboratory. No VOCs or PFCs were detected at levels exceeding soil standards. Because of the elevated PID field screening readings, detection of VOCs was anticipated. Additional review of the gas chromatograph results by the laboratory chemist showed no unidentified peaks and confirmed that there are no volatile contaminants in the soil samples analyzed. This means the field meter was inaccurately reporting volatiles in the soil samples. Soil analytical results are summarized in the attached tables.

Groundwater Analytical Results

No significant concentrations of VOCs or PFCs were detected in the groundwater samples analyzed by the laboratory. No VOCs or PFCs were detected at levels exceeding groundwater standards. Groundwater analytical results are summarized in the attached tables.

Recommendations

No additional investigation is recommended. No VOC or PFC contamination was detected in the soil or groundwater samples analyzed at levels exceeding standards.

Please contact me via e-mail at luke.hellermann@strand.com or by phone at (608) 251-4843 ext. 1065 with any questions.

Sincerely,

STRAND ASSOCIATES, INC.®

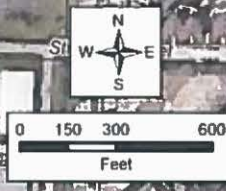
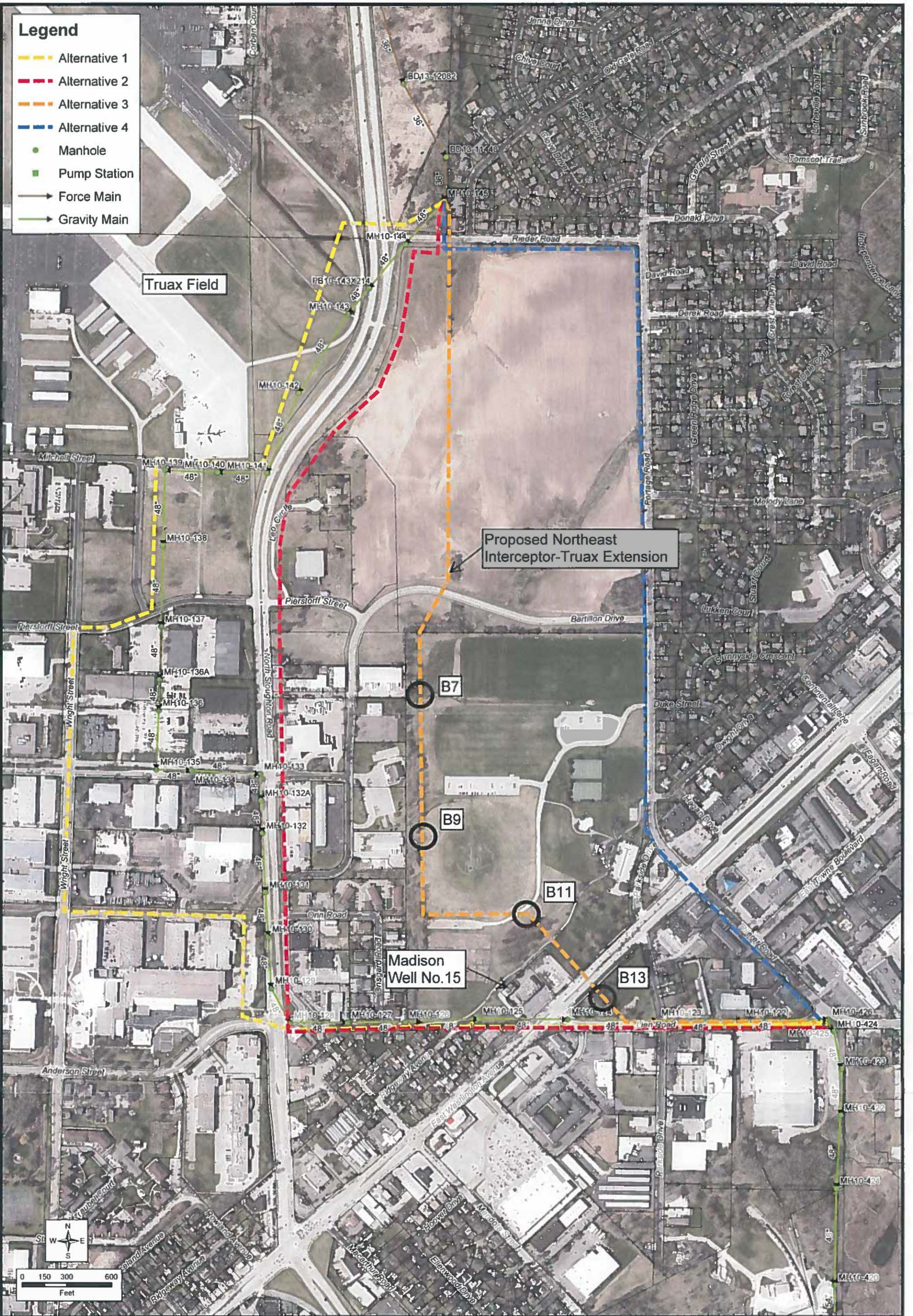


Luke T. Hellermann, P.G.

Enclosures

c/enc.: Mike Schmoller, Wisconsin Department of Natural Resources
Stephanie Thomsen, Strand Associates, Inc.®

- Legend**
- Alternative 1
 - Alternative 2
 - Alternative 3
 - Alternative 4
 - Manhole
 - Pump Station
 - Force Main
 - Gravity Main



ENVIRONMENTAL BORING LOCATIONS

**NORTHEAST INTERCEPTOR - TRUAX EXTENSION RELIEF PROJECT MADISON
METROPOLITAN SEWERAGE DISTRICT
CITY OF MADISON
DANE COUNTY, WISCONSIN**

**GROUNDWATER ANALYTICAL RESULTS
MMSD, NORTHEAST INTERCEPTOR-TRUAX EXTENSION**

Compound	NR 140 ES/PAL	Health Advisory	⁽¹⁾ EPA RSL Tapwater	B7 ⁽²⁾ 28.5 to 38.5 ft	B9 ⁽²⁾ 28.5 to 38.5 ft	B11 ⁽²⁾ 30 to 40 ft	B13 ⁽²⁾ 11 to 21 ft
VOCs, detected (µg/L)							
Acetone	9,000/ 1,800	NA	14,000	7.9	6	<1.7	10
Benzene	5/0.5	NA	5	0.26 J	<0.15	<0.15	<0.15
1,4-Dichlorobenzene	75/15	NA	75	<0.36	<0.36	<0.36	<0.36
Toluene	800/160	NA	1000	0.37 J	0.23 J	0.54	0.41 J
PFCs, detected (µg/L)							
Perfluorooctanesulfonic acid (PFOS)	NA	0.07	NA	0.0074	0.011	<0.00091	0.0069
Perfluorooctanoic acid (PFOA)	NA	0.07	NA	0.012	0.0068	0.0017 J	0.0018 J
PFOS+PFOA	NA	0.07	NA	0.0194	0.0178	0.0017	0.0087
Perfluorobutanesulfonic acid (PFBS)	NA	NA	400	0.0084	0.0071	0.00069 J	0.0013 J
Perfluoroheptanoic acid (PFHpA)	NA	NA	NA	0.0068	0.0054	0.0013 J	<0.00044
Perfluorohexanesulfonic acid (PFHxS)	NA	NA	NA	0.0063	0.00099 J	<0.00029	0.00098 J
Perfluorononanoic acid (PFNA)	NA	NA	NA	<0.00079	0.014 J	<0.00046	<0.00047

- Notes: Samples were collected on July 16 and 17, 2018.
- ES NR140 enforcement standard
- Health Advisory from USEPA Office of Water, 2016a and 2016b for drinking water
- J concentration reported between the limit of detection and limit of quantitation
- µg/L micrograms per liter
- NA not applicable
- PAL NR140 preventive action limit
- PFC perfluorinated compound
- VOC volatile organic compound
- PFOS+PFOA PFOA and PFOS (PFOA + PFOS) in aqueous samples is reported using the following guidelines:
- If both PFOA and PFOS are detected at or above the detection limit, then the sum of PFOA + PFOS is reported.
 - If either PFOA or PFOS is detected at or above the detection limit and the other is below the detection limit, then PFOA + PFOS is reported as "NA" (not applicable).
 - If neither PFOA nor PFOS is detected at or above the detection limit, then PFOA + PFOS is reported as "ND" (not detected).
- ⁽¹⁾ USEPA Regional Screening Levels (May 2018) [<https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>].
- ⁽²⁾ The depth is the screened interval of the temporary monitoring well installed in the boring.

NOTES

1. The boundary lines between different soil strata, as shown on the WDNR Soil Boring Log Information Forms 4400-122 and WDNR Soil Boring Log Information Supplement Forms 4400-122a, are approximate and may be gradual.
2. The drillers' field log contains a description of the soil conditions between samples based on the equipment performance and the soil cuttings. The WDNR Soil Boring Log Information Forms 4400-122 and WDNR Soil Boring Log Information Supplement Forms 4400-122a contain the description of the soil conditions as interpreted by a geotechnical engineer and/or a geologist after review of the drillers' field logs and soil samples and/or laboratory test results.
3. We define "Caved Level" as the depth below the existing ground surface at a boring location where the soils have collapsed into the borehole following removal of the drilling tools.
4. We define "Water Level" as the depth below the existing ground surface at a boring location to the level of water in the open borehole at the time indicated unless otherwise defined on the WDNR Soil Boring Log Information Forms 4400-122 or WDNR Soil Boring Log Information Supplement Forms 4400-122a.
5. We define "at completion" for a boring as being the time when our drilling crew has completed the removal of all drilling tools from the borehole.
6. The Notes and Legend Record and the WDNR Soil Boring Log Information Forms 4400-122 and WDNR Soil Boring Log Information Supplement Forms 4400-122a are a part of the geotechnical report. The geotechnical report should be included in the bidding or reference documents.

RELATIVE PERCENTAGE TERMS

(Used in Material Descriptions)

no	0%
trace	<5%
few	5 to <10%
little	10 to <30%
some	30 to < 50%

SOIL PROPERTIES LEGEND

Pocket Penetrometer, ¹⁰⁰/_{ft}
 P200 = % Passing the No. 200-mesh Sieve

RELATIVE MOISTURE TERMS AT TIME OF SAMPLING

Frozen or F = Frozen material
 Dry = Dusty, dry to touch, absence of moisture
 Moist or M = Damp to touch, no visible water
 Wet or W = Visible free water

DRILLING METHODS LEGEND

HSA = Continuous flight hollow-stem augers

BLOW COUNTS LEGEND


DS = Drove Stone
 OB = On Cobble or Boulder

RQD/COMMENTS LEGEND

OO = Organic Odor
 PID = Photoionization Detector Reading, equivalent units of isobutylene calibration gas

SAMPLER TYPE LEGEND

 Grab sample

 2-inch-outside-diameter, split-barrel sampler



Soils & Engineering Services, Inc.

1102 STEWART STREET • MADISON, WISCONSIN 53713
 Phone: 608-274-7600 • 888-866-SOIL (7645)
 Fax: 608-274-7511 • Email: soils@soils.ws

CONSULTING CIVIL ENGINEERS SINCE 1966

NOTES AND LEGEND RECORD
 Northeast Interceptor Sewer
 Truax Extension Relief Project
 Madison Metropolitan Sewerage District
 City of Madison, Dane County, Wisconsin

Route To: Watershed/Wastewater Waste Management
 Remediation/Redevelopment Other _____

SES Project Number **13222**

Facility/Project Name Northeast Interceptor Sewer, Truax Extension Relief Project, Madison Metropolitan Sewerage District		License/Permit/Monitoring Number		Boring Number B7	
Boring Drilled By: Name of crew chief (first, last) and Firm Scott W. Klumb Soils & Engineering Services, Inc.		Date Drilling Started July 16, 2018		Date Drilling Completed July 17, 2018	
WI Unique Well No.		DNR Well ID No.		Common Well Name	
Final Static Water Level		Surface Elevation		Borehole Diameter 6.6 in	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input type="checkbox"/>			Local Grid Location		
State Plane _____ ft. N, _____ ft. E. S / C / N			Lat _____		
NW 1/4 of SW 1/4 of Sec. 28 , T. 8 N. R. 10 (E) / W			Long _____		
Facility ID		County Dane		County Code 13	
Civil Town/City/ or Village City of Madison/Civil Township of Burke					

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties						RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index	P 200		
Total Depth = 39'-2"															
TS		4		SANDY SILT (ML/SM) — non-plastic to low plasticity, dark brown, moist, FILL TOPSOIL, trace gravel-[15" thick]	ML/SM			511						M	
1	12	6	1											M	
		6		SANDY SILT WITH GRAVEL (ML/SM) — non-plastic to low plasticity, very dark brown to grayish-brown, moist, medium dense to loose relative density, FILL-[4'-3" thick]											
2		6	2		ML/SM			302						M	
		6													
		3													
		4													
		4													

I hereby certify that the information on this form is true and correct to the best of my knowledge.








Signature <i>Craig M. Bower</i>	Firm Soils & Engineering Services, Inc. 1102 Stewart Street Madison, Wisconsin 53713	Tel: 608-274-7600 Fax: 608-274-7511
---------------------------------	--	--

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Facility/Project Name **Northeast Interceptor Sewer, Truax Extension Relief Project,
Madison Metropolitan Sewerage District**
Boring Number **B7** Use only as an attachment to Form 4400-122.

SES Project Number **13222**

Page **2** of **6**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties				RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index	
		5			ML/SM								M
		6		LEAN CLAY (CL) — dark brown, organic odor, moist, stiff to very stiff consistency, TOPSOIL -[18" thick]	CL			114	3.0				M, OO
4		7		SILT (ML) — non-plastic to low plasticity, grayish-brown, moist, loose relative density	ML			22.8	1.8, 2.3				M
		8		LEAN CLAY (CL) — medium plasticity, gray and brown mottled, moist, very stiff consistency	CL								M
5		9			CL			3.2					M
		10			CL			9.9	2.3, 2.9				M
6		11						0.0					M
		12		SILTY SAND WITH GRAVEL, COBBLES, AND BOULDERS (SM) — fine to medium grained, non-plastic to low plasticity fines, brown and reddish-brown, moist, medium dense to loose relative density, GLACIAL TILL , trace to some gravel, occasional to trace cobbles, occasional to trace boulders	SM								M

Facility/Project Name Northeast Interceptor Sewer, Truax Extension Relief Project,
Madison Metropolitan Sewerage District

SES Project Number 13222

Boring Number B7

Use only as an attachment to Form 4400-122.

Page 3 of 6

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties					RQD/ Comments																										
Number and Type	Length Att. & Recovered (in)								Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index	P 200																											
8	24	9	14	SILTY SAND WITH GRAVEL, COBBLES, AND BOULDERS (SM) — fine to medium grained, non-plastic to low plasticity fines, brown and reddish-brown, moist, medium dense to loose relative density, GLACIAL TILL , trace to some gravel, occasional to trace cobbles, occasional to trace boulders (continued)	SM			0.0					M																											
		8	15											0.0	M																									
9	24	9	16											SILTY SAND WITH GRAVEL, COBBLES, AND BOULDERS (SM) — fine to medium grained, non-plastic to low plasticity fines, brown and reddish-brown, moist, medium dense to loose relative density, GLACIAL TILL , trace to some gravel, occasional to trace cobbles, occasional to trace boulders (continued)	SM			0.0				M																		
		8	17																				0.0	M																
10	24	3	18																				SILTY SAND WITH GRAVEL, COBBLES, AND BOULDERS (SM) — fine to medium grained, non-plastic to low plasticity fines, brown and reddish-brown, moist, medium dense to loose relative density, GLACIAL TILL , trace to some gravel, occasional to trace cobbles, occasional to trace boulders (continued)	SM			0.0				W									
		3	19																													0.0								
	24	9	20																													SILTY SAND WITH GRAVEL, COBBLES, AND BOULDERS (SM) — fine to medium grained, non-plastic to low plasticity fines, brown and reddish-brown, moist, medium dense to loose relative density, GLACIAL TILL , trace to some gravel, occasional to trace cobbles, occasional to trace boulders (continued)	SM			0.0				
		12	21																																					

Facility/Project Name **Northeast Interceptor Sewer, Truax Extension Relief Project,
Madison Metropolitan Sewerage District**
Boring Number **B7**

SES Project Number **13222**

Use only as an attachment to Form 4400-122.

Page **6** of **6**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties					P 200	RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Pocket Pneumometer	Moisture Content	Liquid Limit	Plasticity Index			
			38	SANDSTONE — <i>slightly to moderately weathered, yellowish-brown, moist, very dense relative density (continued)</i>											
		14	39												
		46													
		54/2"													
			40												
			41												
			42												
			43												
			44												
			45												

NOTES

1. After obtaining 23'-6" sample, set temporary well using 1-inch-diameter PVC riser with 10-foot PVC screen to 23'-6" and pulled HSA up to 17'-6". Left well in borehole overnight and found it dry. Pulled well and continued to the maximum depth drilled.
2. After obtaining 38'-6" sample, set temporary well using 1-inch-diameter PVC riser with 10-foot PVC screen to 38'-6" and removed HSA from the borehole. Left well in borehole overnight and measured waterlevel reported on this WDNR Soil boring Log Information form(s). Pulled well and abandoned borehole.
3. Photoionization (PID) readings obtained by personnel from Strand Associates, Inc. in the field after sample obtention and the PID readings were provided to us for inclusion on this WDNR Soil boring Log Information form(s).
4. The Notes and Legend Record is considered a part of the WDNR Soil Boring Log Information form(s) for Boring B7.

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

SES Project Number **13222**

Page **1** of **6**

Facility/Project Name Northeast Interceptor Sewer, Truax Extension Relief Project, Madison Metropolitan Sewerage District			License/Permit/Monitoring Number		Boring Number B9	
Boring Drilled By: Name of crew chief (first, last) and Firm Scott W. Klumb Soils & Engineering Services, Inc.			Date Drilling Started July 16, 2018		Date Drilling Completed July 16, 2018	
WI Unique Well No.		DNR Well ID No.		Common Well Name		Borehole Diameter 6.6 in
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input type="checkbox"/>			Local Grid Location			
State Plane _____ ft. N, _____ ft. E. S/C/N			Lat _____			<input type="checkbox"/> N <input type="checkbox"/> E
SW 1/4 of SW 1/4 of Sec. 28 , T. 8 N. R. 10 (E)W			Long _____			Feet <input type="checkbox"/> S _____ Feet <input type="checkbox"/> W
Facility ID		County Dane		County Code 13		Civil Town/City/ or Village City of Madison/Civil Township of Burke

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties					RQD/ Comments
									Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1	24 22	3	3	LEAN CLAY (CL) — medium plasticity, dark brown, organic odor, moist, FILL TOPSOIL-[4" thick]	CL			195					M; OO	
				SANDY SILT WITH GRAVEL (ML) — non-plastic to low plasticity, brown and dark brown, moist, loose relative density, FILL-[14" thick]	ML									M
				LEAN CLAY (CL) — very dark brown, organic odor, moist, hard consistency, TOPSOIL-[18" thick]	CL									M
2	24 22	3	7	LEAN CLAY (CL) — medium plasticity, brown, moist, hard to very stiff consistency	CL			5.0, 6.0+				M		
				With dark gray seams at 3'-9"									CL	152
		3	3											
		3	3											
		5	5											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Craig M. Bower Firm **Soils & Engineering Services, Inc.** Tel: 608-274-7600
1102 Stewart Street Madison, Wisconsin 53713 Fax: 608-274-7511

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Facility/Project Name **Northeast Interceptor Sewer, Truax Extension Relief Project,**
Madison Metropolitan Sewerage District
Boring Number **B9**

SES Project Number **13222**

Use only as an attachment to Form 4400-122.

Page **2** of **6**

Sample		Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index	P 200	
3		4	4	LEAN CLAY (CL) — medium plasticity, brown, moist, hard to very stiff consistency (continued)	CL			0.0	3.5, 4.0					M
		4	6	CLAYEY SAND (SC) — fine grained, medium plasticity fines, brown, moist, loose relative density	SC									M
4		7	7	POORLY-GRADED SAND WITH SILT (SP/SM) — fine grained, non-plastic to low plasticity fines, light brown, moist, medium dense relative density, trace to little gravel	SP/SM			0.0						M
5		8	9	SILTY SAND WITH GRAVEL, COBBLES, AND BOULDERS (SM) — fine to medium grained, non-plastic to low plasticity fines, brown and reddish-brown, moist to wet, medium dense to very dense relative density, GLACIAL TILL, trace to some gravel, occasional to trace cobbles, occasional to trace boulders	SM			0.0						M
6		11	11					0.0						M
		12	12					0.0						M
		10	13					0.0						M

Facility/Project Name **Northeast Interceptor Sewer, Truax Extension Relief Project,
Madison Metropolitan Sewerage District**
Boring Number **B9**

SES Project Number **13222**

Use only as an attachment to Form 4400-122.

Page **3** of **6**


Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index	P 200	
8	24	12		SILTY SAND WITH GRAVEL, COBBLES, AND BOULDERS (SM) — fine to medium grained, non-plastic to low plasticity fines, brown and reddish-brown, moist to wet, medium dense to very dense relative density, GLACIAL TILL , trace to some gravel, occasional to trace cobbles, occasional to trace boulders (continued) 3" sandstone cobble at 14'-6"	SM			0.0					M	
		8 DS	14											
9	24	3		6" cobbles at 18'-0"	SM			0.0					M-W	
		4	15											
		4	17											
10	24	7		6" cobbles at 18'-0"	SM			0.0				M-W		
		3	18											
	5	3/4"												
	60/1"	OB												
			19											
			20											
			21										▼20'-10 1/4"	

Facility/Project Name **Northeast Interceptor Sewer, Truax Extension Relief Project,
Madison Metropolitan Sewerage District**
Boring Number **B9**

SES Project Number **13222**

Use only as an attachment to Form 4400-122.

Page **6** of **6**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties					RQD/ Comments
Number and Type	Length Alt. & Recovered (in)								Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index	P 200	
			38	SILTY SAND WITH GRAVEL, COBBLES, AND BOULDERS (SM) — <i>fine to medium grained, non-plastic to low plasticity fines, brown and reddish-brown, moist to wet, medium dense to very dense relative density, GLACIAL TILL, trace to some gravel, occasional to trace cobbles, occasional to trace boulders (continued)</i>	SM									
14		13	39											
			19											
			25										M	
			40											
			41	NOTES 1. After obtaining 38'-6" sample, set temporary well using 1-inch-diameter PVC riser with 10-foot PVC screen to 38'-6" and removed HSA from the borehole. Left well in borehole overnight and measured waterlevel reported on this WDNR Soil boring Log Information form(s). Pulled well and abandoned borehole. 2. Photoionization (PID) readings obtained by personnel from Strand Associates, Inc. in the field after sample obtention and the PID readings were provided to us for inclusion on this WDNR Soil boring Log Information form(s). 3. The Notes and Legend Record is considered a part of the WDNR Soil Boring Log Information form(s) for Boring B9.										
			42											
			43											
			44											
			45											

Route To: Watershed/Wastewater Waste Management
 Remediation/Redevelopment Other _____

SES Project Number **13222**

Facility/Project Name Northeast Interceptor Sewer, Truax Extension Relief Project, Madison Metropolitan Sewerage District		License/Permit/Monitoring Number		Boring Number B11	
Boring Drilled By: Name of crew chief (first, last) and Firm Scott W. Klumb Soils & Engineering Services, Inc.		Date Drilling Started July 16, 2018		Date Drilling Completed July 17, 2018	
WI Unique Well No.		DNR Well ID No.		Common Well Name	
Final Static Water Level		Surface Elevation		Borehole Diameter 6.6 in	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input type="checkbox"/>		State Plane _____ ft. N, _____ ft. E. S/C/N		Local Grid Location	
SE 1/4 of SW 1/4 of Sec. 28, T. 8 N. R. 10 E/W		Lat _____		<input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	

Facility ID	County Dane	County Code 13	Civil Town/City/ or Village City of Madison/Civil Township of Burke
-------------	-----------------------	--------------------------	---

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties					RQD/ Comments		
									Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index	P 200			
Total Depth = 40'-0"																
1	24	5	5	SANDY SILT (ML) — non-plastic to low plasticity, dark brown, moist, FILL TOPSOIL-[3" thick]	ML	[Pattern]										
		3	8	SILTY SAND WITH GRAVEL (SM) — fine grained, non-plastic to low plasticity fines, brown, moist, loose relative density, FILL-[9" thick]	SM	[Pattern]										M
		6	14	LEAN CLAY (CL) — medium plasticity, very dark brown, moist, very stiff to hard consistency, FILL TOPSOIL, trace gravel-[36" thick]	CL	[Pattern]		4,560	3.3, 5.0, 6.0+						M; OO	
2	24	5	19		CL	[Pattern]										
		6	25		CL	[Pattern]										
		7	32		CL	[Pattern]		3,106	3.9, 3.0						M	
4	24	4	36	LEAN CLAY (CL) — medium plasticity, brown, moist, very stiff consistency	CL	[Pattern]										
		4	40		CL	[Pattern]										
		3	43		CL	[Pattern]										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature <i>Craig M. Bower</i>	Firm Soils & Engineering Services, Inc. 1102 Stewart Street Madison, Wisconsin 53713	Tel: 608-274-7600 Fax: 608-274-7511
------------------------------------	---	--

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Facility/Project Name **Northeast Interceptor Sewer, Truax Extension Relief Project,
Madison Metropolitan Sewerage District**
Boring Number **B11**

SES Project Number **13222**

Use only as an attachment to Form 4400-122.

Page **2** of **6**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties					RQD/ Comments
Number and Type	Length Alt. & Recovered (in)								Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index	P 200	
3	16	3	6	LEAN CLAY (CL) — medium plasticity, brown, moist, very stiff consistency (continued)	CL			6,446	3.5, 3.4					M
		6	6											
		3	7											
		3	7											
		3	7											
		3	7											
4	22	3	8	SILTY SAND (SM/SP) — fine grained, non-plastic to low plasticity fines, brown, moist, loose relative density	SM/SP			6,659					M	
		2	8											
		2	9											
5	16	1	9	CLAYEY SAND (SC/SP) — fine grained, medium plasticity fines, brown, moist, very loose to loose relative density	SC/SP			3,360					M	
		4	10											
		4	10											
6	10	4	11	SILTY SAND WITH GRAVEL, COBBLES, AND BOULDERS (SM) — fine to medium grained, non-plastic to low plasticity fines, brown and reddish-brown, moist to wet, loose to very dense relative density, GLACIAL TILL , trace to some gravel, occasional to trace cobbles, occasional to trace boulders	SM			3,089					M	
		4	11											
		5	11											
		4	11											
		DS	12											
3	12													
4	13													

Facility/Project Name **Northeast Interceptor Sewer, Truax Extension Relief Project,**
Madison Metropolitan Sewerage District

SES Project Number **13222**

Boring Number **B11**

Use only as an attachment to Form 4400-122.

Page **3** of **6**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties					RQD/ Comments											
Number and Type	Length Att. & Recovered (in)								Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index	P 200												
		12		SILTY SAND WITH GRAVEL, COBBLES, AND BOULDERS (SM) — <i>fine to medium grained, non-plastic to low plasticity fines, brown and reddish-brown, moist to wet, loose to very dense relative density, GLACIAL TILL, trace to some gravel, occasional to trace cobbles, occasional to trace boulders (continued)</i>	SM																				
		13																							
	24	14																2,135							M
		8																							
8		8																							
		15																							
		10																							
	22	10																2,600							M
		16																							
		6																							
		10																							
9		17																							
		11																							
	22	12																	936						M
		18																							
		9																							
		13																							
10		19																							
		15																							
	24	19																							
		20						1,099						M											
		10																							
		16																							
		21																							

Facility/Project Name **Northeast Interceptor Sewer, Truax Extension Relief Project,
Madison Metropolitan Sewerage District**
Boring Number **B11**

SES Project Number **13222**

Use only as an attachment to Form 4400-122.

Page **4** of **6**

Sample		Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)							Blow Counts	Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index	
11		16	SILTY SAND WITH GRAVEL, COBBLES, AND BOULDERS (SM) — fine to medium grained, non-plastic to low plasticity fines, brown and reddish-brown, moist to wet, loose to very dense relative density, GLACIAL TILL, trace to some gravel, occasional to trace cobbles, occasional to trace boulders (continued)	SM			438					M	
		21											
		22											
		11											
		21											
12		23											
		25											
		24											
		24											
		24											
		16											
		30											
13		25	4" sandstone cobble at 25'-0"	SM									
		40											
		35					315					M	
		26	4" dolomite cobble at 26'-0"										
		9											
		14											
14		27										▽26'-10 ³ / ₄ " through well screen at 1 day	
		25										▽27'-0" through well screen at completion	
		31					1,366					M	
		28											
		12											
		36											
15		29											

Facility/Project Name **Northeast Interceptor Sewer, Truax Extension Relief Project,
Madison Metropolitan Sewerage District**
Boring Number **B11**

SES Project Number **13222**

Use only as an attachment to Form 4400-122.

Page **5** of **6**

Sample		Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID Readings	Soil Properties					RQD/ Comments										
Number and Type	Length Att. & Recovered (in)								Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index	P 200											
		60/4"	38	SILTY SAND WITH GRAVEL, COBBLES, AND BOULDERS (SM) — <i>fine to medium grained, non-plastic to low plasticity fines, brown and reddish-brown, moist to wet, loose to very dense relative density, GLACIAL TILL, trace to some gravel, occasional to trace cobbles, occasional to trace boulders (continued)</i>	SM			1,128						(caved) 29'-2" at completion M										
	22		30																					
	20		36																					
16	24		31																					
	22		48																					
	24		78																					
	22		32																					
	21		21																					
17	18		70																					
	18		33																					
	18		47																					
	24		34																					
	22		25																					
	24		31																					
18	24		35												with few fine POORLY-GRADED SAND (SP) lenses at 35'-0"	SP			1,234					M
	22		38																					
	22		36																					
	24		36																					
	22		37																					
	24		1,077										M-W											

Facility/Project Name **Northeast Interceptor Sewer, Truax Extension Relief Project,**
Madison Metropolitan Sewerage District
Boring Number **B11**

SES Project Number **13222**

Use only as an attachment to Form 4400-122.

Page **6** of **6**

Sample		Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties					RQD/ Comments	
Number and Type	Length Att. & Recovered (in)							Blow Counts	Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index		P 200
		38	SILTY SAND WITH GRAVEL, COBBLES, AND BOULDERS (SM) — <i>fine to medium grained, non-plastic to low plasticity fines, brown and reddish-brown, moist to wet, loose to very dense relative density, GLACIAL TILL, trace to some gravel, occasional to trace cobbles, occasional to trace boulders (continued)</i>	SM									M	
		39												
19	18	19												
		40												
		41	NOTES 1. After obtaining 38'-6" sample, set temporary well using 1-inch-diameter PVC riser with 10-foot PVC screen to 40'-0" and removed HSA from the borehole. Left well in borehole overnight and measured waterlevel reported on this WDNR Soil boring Log Information form(s). Pulled well and abandoned borehole. 2. Photoionization (PID) readings obtained by personnel from Strand Associates, Inc. in the field after sample obtention and the PID readings were provided to us for inclusion on this WDNR Soil boring Log Information form(s). 3. The Notes and Legend Record is considered a part of the WDNR Soil Boring Log Information form(s) for Boring B11.											
		42												
		43												
		44												
		45												

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

SES Project Number **13222**

Page 1 of 6

Facility/Project Name Northeast Interceptor Sewer, Truax Extension Relief Project, Madison Metropolitan Sewerage District		License/Permit/Monitoring Number		Boring Number B13	
Boring Drilled By: Name of crew chief (first, last) and Firm Scott W. Klumb Soils & Engineering Services, Inc.		Date Drilling Started July 17, 2018		Date Drilling Completed July 17, 2018	
Drilling Method HSA		Final Static Water Level Caved & Dry		Surface Elevation	
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter 5.6 in
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input type="checkbox"/>			Local Grid Location		
State Plane _____ ft. N. _____ ft. E. S/C/N			Lat _____		
SE 1/4 of SW 1/4 of Sec. 28, T. 8 N, R. 10 E/W			Long _____		
			Feet <input type="checkbox"/> N <input type="checkbox"/> E Feet <input type="checkbox"/> S <input type="checkbox"/> W		

Facility ID	County Dane	County Code 13	Civil Town/City/ or Village City of Madison/Civil Township of Burke
-------------	----------------	-------------------	--

Sample Number and Type	Length Alt. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID Readings	Soil Properties					RQD/ Comments
									Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1	24	3	3	LEAN CLAY (CL) — medium plasticity, very dark brown, organic odor, moist, FILL TOPSOIL , trace sand & gravel-[12" thick]	CL			503	3.2, 3.5					M; OO
		6	6											
		4	10											
2	24	2	2	LEAN CLAY (CL) — medium plasticity, brown, moist, very stiff consistency	CL			328	2.4, 2.5, 3.0					M
		3	5											
		3	8											
		4	12											
	24	2	2	CLAYEY SAND (SC) — fine grained, medium plasticity fines, brown, moist, loose relative density	SC									
		3	5											
		5	10											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature <i>Craig M. Lower</i>	Firm Soils & Engineering Services, Inc. 1102 Stewart Street Madison, Wisconsin 53713	Tel: 608-274-7600 Fax: 608-274-7511
------------------------------------	--	--

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Facility/Project Name **Northeast Interceptor Sewer, Truax Extension Relief Project,**
Madison Metropolitan Sewerage District

SES Project Number **13222**

Boring Number **B13**

Use only as an attachment to Form 4400-122.

Page **2** of **6**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index	P 200	
3	16	3	3	CLAYEY SAND (SC) — fine grained, medium plasticity fines, brown, moist, loose relative density (continued)	SC			97.1						M-W
4	24	4	4											
			6											
		3	3											
		2	2											
4		7	7	SILTY SAND (SM/SP) — fine grained, non-plastic to low plasticity fines, brown, moist, very loose relative density				0.0						M-W
		2	2											
		2	2											
		2	2											M-W
5	22	2	2											
		2	2											
		2	2											
		2	2											
5	13	9	9											
		2	2		SM/SP									
		2	2											
		2	2											
		4	4											
		1	1											M
6		11	11											
		1	1											M
		3	3											
		3	3											
		3	3											
		20	12	POORLY-GRADED SAND WITH SILT (SP/SM) — fine grained, pale brown with gray, moist, loose to very loose relative density, stratified, with SILT (ML) lenses and seams	ML SP/SM			0.0						
		3	3											
		3	3											

Facility/Project Name **Northeast Interceptor Sewer, Truax Extension Relief Project,
Madison Metropolitan Sewerage District**
Boring Number **B13** Use only as an attachment to Form 4400-122.

SES Project Number **13222**

Page **3** of **6**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index	P 200	
7		3	14	POORLY-GRADED SAND WITH SILT (SP/SM) — fine grained, pale brown with gray, moist, loose to very loose relative density, stratified, with SILT (ML) lenses and seams (continued)	ML SP/SM			0.0					M-W	
	19	6	14											
	24	2	15											
8		2	15											
	20	1	16	POORLY-GRADED GRAVEL WITH SAND (GP) — fine to coarse grained, brown, moist to wet, medium dense relative density, with POORLY-GRADED SAND WITH GRAVEL (SP) layers Dark gray stain at 16'-0"	GP SP			0.0				W		
	24	9	17											
9		12	17											
	18	14	18											
	24	12	18											
			19	POORLY-GRADED SAND WITH SILT (SP/SM) — fine grained, pale brown with gray, moist, loose to very loose relative density, stratified, with SILT (ML) lenses and seams (continued)	ML SP/SM			0.0				M		
		5	20											
	10	6	21											

Facility/Project Name **Northeast Interceptor Sewer, Truax Extension Relief Project,
Madison Metropolitan Sewerage District**

SES Project Number **13222**

Boring Number **B13**

Use only as an attachment to Form 4400-122.

Page 4 of 6

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties					P 200	RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index			
10	24	9 14	22	POORLY-GRADED GRAVEL WITH SAND (GP) — fine to coarse grained, brown, moist to wet, medium dense relative density, with POORLY-GRADED SAND WITH GRAVEL (SP) layers (continued)	GP SP										
11	18 16	7 7 7	24 25	SANDY SILT WITH GRAVEL AND COBBLES (ML) — non-plastic to low plasticity, pale brown, wet, loose relative density, GLACIAL TILL , trace to some gravel, trace to few cobbles	ML										
		2	29												

Facility/Project Name **Northeast Interceptor Sewer, Truax Extension Relief Project,
Madison Metropolitan Sewerage District**
Boring Number **B13**

SES Project Number **13222**

Use only as an attachment to Form 4400-122.

Page **5** of **6**

Sample		Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index	P 200	
12	18	5	30	SANDY SILT WITH GRAVEL AND COBBLES (ML) — non-plastic to low plasticity, pale brown, wet, loose relative density, GLACIAL TILL, trace to some gravel, trace to few cobbles (continued)									W	
		3												
13	18	8	35	4" cobble at 33'-6"	ML								W	
		4												
		5												
			36											
			37											

Facility/Project Name **Northeast Interceptor Sewer, Truax Extension Relief Project,**
Madison Metropolitan Sewerage District
Boring Number **B13** Use only as an attachment to Form 4400-122.

SES Project Number **13222**

Page **6** of **6**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID Readings	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Pocket Penetrometer	Moisture Content	Liquid Limit	Plasticity Index	P 200	
			38	SANDY SILT WITH GRAVEL AND COBBLES (ML) — non-plastic to low plasticity, pale brown, wet, loose relative density, GLACIAL TILL, trace to some gravel, trace to few cobbles (continued)	ML									
	2	4	39											
14	18	4	40											
		7 DS	40											
			41											
			42	NOTES 1. After obtaining 38'-6" sample, set temporary well using 1-inch-diameter PVC riser with 10-foot PVC screen to 38'-6" and removed HSA from the borehole. Left well in borehole overnight and measured waterlevel reported on this WDNR Soil boring Log Information form(s). Pulled well and abandoned borehole. 2. Photoionization (PID) readings obtained by personnel from Strand Associates, Inc. in the field after sample obtention and the PID readings were provided to us for inclusion on this WDNR Soil boring Log Information form(s). 3. The Notes and Legend Record is considered a part of the WDNR Soil Boring Log Information form(s) for Boring B13.										
			43											
			44											
			45											

**GROUNDWATER ANALYTICAL RESULTS
MMSD, NORTHEAST INTERCEPTOR-TRUAX EXTENSION**

REVISED RESULTS
(see revised lab report dated 9/11/2018)

Compound	NR 140 ES/PAL	Health Advisory	⁽¹⁾ EPA RSL Tapwater	B7 ⁽²⁾ 28.5 to 38.5 ft	B9 ⁽²⁾ 28.5 to 38.5 ft	B11 ⁽²⁾ 30 to 40 ft	B13 ⁽²⁾ 11 to 21 ft
VOCs, detected (µg/L)							
Acetone	9,000/ 1,800	NA	14,000	7.9	6	<1.7	10
Benzene	5/0.5	NA	5	0.26 J	<0.15	<0.15	<0.15
1,4-Dichlorobenzene	75/15	NA	75	<0.36	<0.36	<0.36	<0.36
Toluene	800/160	NA	1000	0.37 J	0.23 J	0.54	0.41 J
PFCs, detected (µg/L)							
Perfluorooctanesulfonic acid (PFOS)	NA	0.07	NA	0.0022	0.0075	<0.00091	0.0034
Perfluorooctanoic acid (PFOA)	NA	0.07	NA	0.0034	0.0046	0.00081 J	0.00088 J
PFOS+PFOA	NA	0.07	NA	0.0056	0.0121	0.00081	0.00428
Perfluorobutanesulfonic acid (PFBS)	NA	NA	400	0.0024	0.0048	0.00033 J	0.00063 J
Perfluoroheptanoic acid (PFHpA)	NA	NA	NA	0.0019	0.0037	0.0006 J	<0.00044
Perfluorohexanesulfonic acid (PFHxS)	NA	NA	NA	0.0018	0.00067 J	<0.00029	0.00048 J
Perfluorononanoic acid (PFNA)	NA	NA	NA	0.00091	0.00097 J	<0.00046	<0.00047

Notes: Samples were collected on July 16 and 17, 2018.

- ES NR140 enforcement standard
- Health Advisory from USEPA Office of Water, 2016a and 2016b for drinking water
- J concentration reported between the limit of detection and limit of quantitation
- µg/L micrograms per liter
- NA not applicable
- PAL NR140 preventive action limit
- PFC perfluorinated compound
- VOC volatile organic compound
- PFOS+PFOA PFOA and PFOS (PFOA + PFOS) in aqueous samples is reported using the following guidelines:
 - If both PFOA and PFOS are detected at or above the detection limit, then the sum of PFOA + PFOS is reported.
 - If either PFOA or PFOS is detected at or above the detection limit and the other is below the detection limit, then PFOA + PFOS is reported as "NA" (not applicable).
 - If neither PFOA nor PFOS is detected at or above the detection limit, then PFOA + PFOS is reported as "ND" (not detected).

(1) USEPA Regional Screening Levels (May 2018) [<https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>].

(2) The depth is the screened interval of the temporary monitoring well installed in the boring.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

TestAmerica Job ID: 320-41248-1
Client Project/Site: MMSD NE Interceptor - 1021.021
Revision: 1

For:
Strand Associates, Inc.
910 West Wingra Drive
Madison, Wisconsin 53715

Attn: Mr. Steve Small



Authorized for release by:
9/11/2018 2:43:01 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	6
Client Sample Results	8
Surrogate Summary	25
Isotope Dilution Summary	26
QC Sample Results	27
QC Association Summary	36
Lab Chronicle	38
Certification Summary	41
Method Summary	42
Sample Summary	43
Chain of Custody	44
Receipt Checklists	46

Definitions/Glossary

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
*	LCS or LCSD is outside acceptance limits.
cn	Refer to Case Narrative for further detail

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
*	LCS or LCSD is outside acceptance limits.
B	Compound was found in the blank and sample.
H	Sample was prepped or analyzed beyond the specified holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Job ID: 320-41248-1

Laboratory: TestAmerica Sacramento

Narrative

Job Narrative 320-41248-1

Comments

REVISION - See highlight below.

Receipt

The samples were received on 7/18/2018 9:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.0° C.

GC/MS VOA

Method(s) 8260B: Methylene Chloride and/or Acetone were detected in the following samples: B-7 GW (320-41248-2), B-9 GW (320-41248-4), B-13 GW (320-41248-8) and Bailer Blank (320-41248-9). The method blanks associated with the samples were non-detect for all compounds. Methylene Chloride and Acetone are known lab contaminants; therefore all low level detects for these compounds should be suspected as lab contamination.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA

Method(s) 537 (modified): Perfluorooctanesulfonic acid (PFOS) was detected above the reporting limit (RL) in the method blank associated with preparation batch 320-236262 and analytical batch 320-237948 as well as in the following samples: B-7 0'-2' (320-41248-1), B-9 0'-2' (320-41248-3), B-11 6'-8' (320-41248-5), B-13 0'-2' (320-41248-7), (MB 320-236262/1-A), (480-139189-C-15-A), (480-139189-C-15-B MS) and (480-139189-C-15-C MSD). All affected samples were re-extracted outside of holding time. Both sets of data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

LCMS

Method(s) 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for Perfluorooctanesulfonic acid (PFOS) For the following sample: (480-138791-C-23-E MS). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method(s) 537 (modified): The laboratory control sample (LCS) for preparation batch 320-236262 and analytical batch 320-237948 recovered outside control limits for the following analytes: Perfluorooctanesulfonic acid (PFOS). The associated samples were re-prepared outside holding time. Both sets of data have been reported for the following samples: B-7 0'-2' (320-41248-1), (LCS 320-236262/2-A), (480-139189-C-15-A), (480-139189-C-15-B MS) and (480-139189-C-15-C MSD).

Method(s) 537 (modified): The matrix spike / matrix spike duplicate (MS/MSD) recoveries for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) for preparation batch 320-236262 and analytical batch 320-237948 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 537 (modified): Internal standard (ISTD) response for the following sample was outside control limits: (480-138791-C-23-E MS). The sample was re-extracted with concurring results, and the both sets of data have been reported.

Method(s) 537 (modified): The laboratory control sample (LCS) for preparation batch 320-236262 and analytical batch 320-237948 recovered outside control limits for the following analyte: Perfluorooctanesulfonic acid (PFOS). This analyte was biased high in the LCS, and was lower than the reporting limit in the associated samples; therefore, the data has been reported for the following samples: B-9 0'-2' (320-41248-3), B-11 6'-8' (320-41248-5) and B-13 0'-2' (320-41248-7).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Case Narrative

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Job ID: 320-41248-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

Organic Prep

Method(s) 3535: The following samples: B-7 GW (320-41248-2), B-11 GW (320-41248-6) and B-13 GW (320-41248-8) in preparation batch 320-235446 were observed to contain a thick layer of sediment prior to extraction.

Method(s) 3535: The following samples: B-7 GW (320-41248-2) in preparation batch 320-235446 were observed to contain sediment prior to extraction.

Method(s) 3535: The following samples: B-7 GW (320-41248-2), B-9 GW (320-41248-4), B-11 GW (320-41248-6) and B-13 GW (320-41248-8) in preparation batch 320-235446 were observed to be a yellow color prior to extraction.

Method(s) 3535: Due to the nature of the sample matrix, the following sample could not be entirely eluted through the SPE column, because the sample clogged the SPE column: B-7 GW (320-41248-2), B-9 GW (320-41248-4), B-11 GW (320-41248-6) and B-13 GW (320-41248-8). Matrix impacts that reduce extraction efficiency are automatically accounted for and corrected by use of the isotope dilution technique for quantitation. 3535 - water - 320-235446

Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 320-235446.

Method(s) SHAKE: The following samples: B-13 0'-2' (320-41248-7) after elution, were observed to be a yellow color.

Method(s) SHAKE: The following samples were re-prepared outside of preparation holding time due to possible mis-spike B-7 0'-2' (320-41248-1), B-9 0'-2' (320-41248-3), B-11 6'-8' (320-41248-5) and B-13 0'-2' (320-41248-7).

Method(s) 3535: A revision was created for the following samples due to a preparation data entry error that resulted in the reporting of high-biased results for PFAS. B-7 GW (320-41248-2), B-9 GW (320-41248-4), B-11 GW (320-41248-6) and B-13 GW (320-41248-8)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-7 0'-2'

Lab Sample ID: 320-41248-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dichlorobenzene	40	J	54	20	ug/Kg	50	☼	8260B	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.099	J	0.23	0.035	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.10	J	0.23	0.098	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.80	B *	0.57	0.23	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - RE	0.52	J H	0.57	0.23	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: B-7 GW

Lab Sample ID: 320-41248-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	7.9	cn	5.0	1.7	ug/L	1		8260B	Total/NA
Benzene	0.26	J	0.50	0.15	ug/L	1		8260B	Total/NA
Toluene	0.37	J	0.50	0.15	ug/L	1		8260B	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.4		1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.8	B	1.7	0.14	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.9		1.7	0.21	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	3.4		1.7	0.72	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.2		1.7	0.46	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.91	J	1.7	0.23	ng/L	1		537 (modified)	Total/NA

Client Sample ID: B-9 0'-2'

Lab Sample ID: 320-41248-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	25		16	9.4	ug/Kg	50	☼	8260B	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.040	J	0.23	0.035	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: B-9 GW

Lab Sample ID: 320-41248-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	6.0	cn	5.0	1.7	ug/L	1		8260B	Total/NA
Toluene	0.23	J	0.50	0.15	ug/L	1		8260B	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.8		1.6	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.67	J B	1.6	0.14	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.7		1.6	0.20	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.6		1.6	0.68	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	7.5		1.6	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.97	J	1.6	0.22	ng/L	1		537 (modified)	Total/NA

Client Sample ID: B-11 6'-8'

Lab Sample ID: 320-41248-5

No Detections.

Client Sample ID: B-11 GW

Lab Sample ID: 320-41248-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.54		0.50	0.15	ug/L	1		8260B	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.33	J	1.6	0.16	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.60	J	1.6	0.20	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.81	J	1.6	0.69	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: Strand Associates, Inc.
 Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-13 0'-2'

Lab Sample ID: 320-41248-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.37	J B *	0.61	0.24	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.045	J	0.24	0.044	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: B-13 GW

Lab Sample ID: 320-41248-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	10	cn	5.0	1.7	ug/L	1		8260B	Total/NA
Toluene	0.41	J	0.50	0.15	ug/L	1		8260B	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.63	J	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.48	J B	1.7	0.15	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.88	J	1.7	0.73	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.4		1.7	0.46	ng/L	1		537 (modified)	Total/NA

Client Sample ID: Bailer Blank

Lab Sample ID: 320-41248-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	6.7	cn	5.0	1.7	ug/L	1		8260B	Total/NA
Methylene Chloride	7.9	cn	5.0	1.6	ug/L	1		8260B	Total/NA
Toluene	1.4		0.50	0.15	ug/L	1		8260B	Total/NA
Xylenes, Total	0.81	J	1.0	0.22	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-7 0'-2'

Lab Sample ID: 320-41248-1

Date Collected: 07/16/18 09:50

Matrix: Solid

Date Received: 07/18/18 09:35

Percent Solids: 85.9

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<25		54	25	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,1,1-Trichloroethane	<21		54	21	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,1,2,2-Tetrachloroethane	<22		54	22	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,1,2-Trichloroethane	<19		54	19	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,1-Dichloroethane	<22		54	22	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,1-Dichloroethene	<21		54	21	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,1-Dichloropropene	<16		54	16	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,2,3-Trichlorobenzene	<25		54	25	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,2,3-Trichloropropane	<23		54	23	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,2,4-Trichlorobenzene	<19		54	19	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,2,4-Trimethylbenzene	<19		54	19	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,2-Dibromo-3-Chloropropane	<110		270	110	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,2-Dibromoethane	<21		54	21	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,2-Dichlorobenzene	<18		54	18	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,2-Dichloroethane	<21		54	21	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,2-Dichloropropane	<23		54	23	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,3,5-Trimethylbenzene	<21		54	21	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,3-Dichlorobenzene	<22		54	22	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,3-Dichloropropane	<20		54	20	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
1,4-Dichlorobenzene	40	J	54	20	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
2,2-Dichloropropane	<24		54	24	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
2-Chlorotoluene	<17		54	17	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
4-Chlorotoluene	<19		54	19	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Benzene	<7.9		14	7.9	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Bromobenzene	<19		54	19	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Bromochloromethane	<23		54	23	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Bromodichloromethane	<20		54	20	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Bromoform	<26		54	26	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Bromomethane	<43		110	43	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Carbon tetrachloride	<21		54	21	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Chlorobenzene	<21		54	21	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Chloroethane	<27		54	27	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Chloroform	<20		110	20	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Chloromethane	<17		54	17	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
cis-1,2-Dichloroethene	<22		54	22	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
cis-1,3-Dichloropropene	<23		54	23	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Dibromochloromethane	<27		54	27	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Dibromomethane	<15		54	15	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Dichlorodifluoromethane	<37		110	37	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Ethylbenzene	<9.9		14	9.9	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Hexachlorobutadiene	<24		54	24	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Isopropyl ether	<15		54	15	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Isopropylbenzene	<21		54	21	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Methyl tert-butyl ether	<21		54	21	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Methylene Chloride	<89		270	89	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Naphthalene	<18		54	18	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
n-Butylbenzene	<21	*	54	21	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
N-Propylbenzene	<23		54	23	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
p-Isopropyltoluene	<20		54	20	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50

TestAmerica Sacramento

Client Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-7 0'-2'

Lab Sample ID: 320-41248-1

Date Collected: 07/16/18 09:50

Matrix: Solid

Date Received: 07/18/18 09:35

Percent Solids: 85.9

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
sec-Butylbenzene	<22	*	54	22	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Styrene	<21		54	21	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
tert-Butylbenzene	<22		54	22	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Tetrachloroethene	<20		54	20	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Toluene	<8.0		14	8.0	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
trans-1,2-Dichloroethene	<19		54	19	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
trans-1,3-Dichloropropene	<20		54	20	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Trichloroethene	<8.9		27	8.9	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Trichlorofluoromethane	<23		54	23	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Vinyl chloride	<14		54	14	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50
Xylenes, Total	<12		27	12	ug/Kg	☼	07/30/18 11:41	07/30/18 14:54	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		75 - 126	07/30/18 11:41	07/30/18 14:54	50
4-Bromofluorobenzene (Surr)	99		72 - 124	07/30/18 11:41	07/30/18 14:54	50
Dibromofluoromethane	83		75 - 120	07/30/18 11:41	07/30/18 14:54	50
Toluene-d8 (Surr)	98		75 - 120	07/30/18 11:41	07/30/18 14:54	50

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	<0.029		0.23	0.029	ug/Kg	☼	07/26/18 09:48	08/04/18 07:22	1
Perfluorohexanesulfonic acid (PFHxS)	0.099	J	0.23	0.035	ug/Kg	☼	07/26/18 09:48	08/04/18 07:22	1
Perfluoroheptanoic acid (PFHpA)	<0.033		0.23	0.033	ug/Kg	☼	07/26/18 09:48	08/04/18 07:22	1
Perfluorooctanoic acid (PFOA)	0.10	J	0.23	0.098	ug/Kg	☼	07/26/18 09:48	08/04/18 07:22	1
Perfluorooctanesulfonic acid (PFOS)	0.80	B *	0.57	0.23	ug/Kg	☼	07/26/18 09:48	08/04/18 07:22	1
Perfluorononanoic acid (PFNA)	<0.041		0.23	0.041	ug/Kg	☼	07/26/18 09:48	08/04/18 07:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	86		25 - 150	07/26/18 09:48	08/04/18 07:22	1
13C4-PFHpA	97		25 - 150	07/26/18 09:48	08/04/18 07:22	1
13C4 PFOA	84		25 - 150	07/26/18 09:48	08/04/18 07:22	1
13C3-PFBS	73		25 - 150	07/26/18 09:48	08/04/18 07:22	1
13C4 PFOS	79		25 - 150	07/26/18 09:48	08/04/18 07:22	1
13C5 PFNA	90		25 - 150	07/26/18 09:48	08/04/18 07:22	1

Method: 537 (modified) - Fluorinated Alkyl Substances - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.52	J H	0.57	0.23	ug/Kg	☼	08/08/18 06:33	08/10/18 21:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	73		25 - 150	08/08/18 06:33	08/10/18 21:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	14.1		0.1	0.1	%			07/20/18 12:10	1
Percent Solids	85.9		0.1	0.1	%			07/20/18 12:10	1

TestAmerica Sacramento

Client Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-7 GW

Lab Sample ID: 320-41248-2

Date Collected: 07/17/18 10:45

Matrix: Water

Date Received: 07/18/18 09:35

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<0.46		1.0	0.46	ug/L			07/26/18 15:33	1
1,1,1-Trichloroethane	<0.38		1.0	0.38	ug/L			07/26/18 15:33	1
1,1,2,2-Tetrachloroethane	<0.40		1.0	0.40	ug/L			07/26/18 15:33	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			07/26/18 15:33	1
1,1-Dichloroethane	<0.41		1.0	0.41	ug/L			07/26/18 15:33	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			07/26/18 15:33	1
1,1-Dichloropropene	<0.30		1.0	0.30	ug/L			07/26/18 15:33	1
1,2,3-Trichlorobenzene	<0.46		1.0	0.46	ug/L			07/26/18 15:33	1
1,2,3-Trichloropropane	<0.41		1.0	0.41	ug/L			07/26/18 15:33	1
1,2,4-Trichlorobenzene	<0.34		1.0	0.34	ug/L			07/26/18 15:33	1
1,2,4-Trimethylbenzene	<0.36		1.0	0.36	ug/L			07/26/18 15:33	1
1,2-Dibromo-3-Chloropropane	<2.0		5.0	2.0	ug/L			07/26/18 15:33	1
1,2-Dibromoethane	<0.39		1.0	0.39	ug/L			07/26/18 15:33	1
1,2-Dichlorobenzene	<0.33		1.0	0.33	ug/L			07/26/18 15:33	1
1,2-Dichloroethane	<0.39		1.0	0.39	ug/L			07/26/18 15:33	1
1,2-Dichloropropane	<0.43		1.0	0.43	ug/L			07/26/18 15:33	1
1,3,5-Trimethylbenzene	<0.25		1.0	0.25	ug/L			07/26/18 15:33	1
1,3-Dichlorobenzene	<0.40		1.0	0.40	ug/L			07/26/18 15:33	1
1,3-Dichloropropane	<0.36		1.0	0.36	ug/L			07/26/18 15:33	1
1,4-Dichlorobenzene	<0.36		1.0	0.36	ug/L			07/26/18 15:33	1
2,2-Dichloropropane	<0.44		1.0	0.44	ug/L			07/26/18 15:33	1
2-Butanone (MEK)	<2.1		5.0	2.1	ug/L			07/26/18 15:33	1
2-Chlorotoluene	<0.31		1.0	0.31	ug/L			07/26/18 15:33	1
4-Chlorotoluene	<0.35		1.0	0.35	ug/L			07/26/18 15:33	1
Acetone	7.9	cn	5.0	1.7	ug/L			07/26/18 15:33	1
Benzene	0.26	J	0.50	0.15	ug/L			07/26/18 15:33	1
Bromobenzene	<0.36		1.0	0.36	ug/L			07/26/18 15:33	1
Bromochloromethane	<0.43		1.0	0.43	ug/L			07/26/18 15:33	1
Bromodichloromethane	<0.37		1.0	0.37	ug/L			07/26/18 15:33	1
Bromoform	<0.48		1.0	0.48	ug/L			07/26/18 15:33	1
Bromomethane	<0.80		2.0	0.80	ug/L			07/26/18 15:33	1
Carbon disulfide	<0.45		2.0	0.45	ug/L			07/26/18 15:33	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			07/26/18 15:33	1
Chlorobenzene	<0.39		1.0	0.39	ug/L			07/26/18 15:33	1
Chloroethane	<0.51		1.0	0.51	ug/L			07/26/18 15:33	1
Chloroform	<0.37		2.0	0.37	ug/L			07/26/18 15:33	1
Chloromethane	<0.32		1.0	0.32	ug/L			07/26/18 15:33	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			07/26/18 15:33	1
cis-1,3-Dichloropropene	<0.42		1.0	0.42	ug/L			07/26/18 15:33	1
Dibromochloromethane	<0.49		1.0	0.49	ug/L			07/26/18 15:33	1
Dibromomethane	<0.27		1.0	0.27	ug/L			07/26/18 15:33	1
Dichlorodifluoromethane	<0.67		2.0	0.67	ug/L			07/26/18 15:33	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/26/18 15:33	1
Hexachlorobutadiene	<0.45		1.0	0.45	ug/L			07/26/18 15:33	1
Isopropyl ether	<0.28		1.0	0.28	ug/L			07/26/18 15:33	1
Isopropylbenzene	<0.39		1.0	0.39	ug/L			07/26/18 15:33	1
Methyl tert-butyl ether	<0.39		1.0	0.39	ug/L			07/26/18 15:33	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			07/26/18 15:33	1
Naphthalene	<0.34		1.0	0.34	ug/L			07/26/18 15:33	1

TestAmerica Sacramento

Client Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-7 GW

Date Collected: 07/17/18 10:45

Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-2

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
n-Butylbenzene	<0.39		1.0	0.39	ug/L			07/26/18 15:33	1
N-Propylbenzene	<0.41		1.0	0.41	ug/L			07/26/18 15:33	1
p-Isopropyltoluene	<0.36		1.0	0.36	ug/L			07/26/18 15:33	1
sec-Butylbenzene	<0.40		1.0	0.40	ug/L			07/26/18 15:33	1
Styrene	<0.39		1.0	0.39	ug/L			07/26/18 15:33	1
tert-Butylbenzene	<0.40		1.0	0.40	ug/L			07/26/18 15:33	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			07/26/18 15:33	1
Tetrahydrofuran	<1.9		10	1.9	ug/L			07/26/18 15:33	1
Toluene	0.37	J	0.50	0.15	ug/L			07/26/18 15:33	1
trans-1,2-Dichloroethene	<0.35		1.0	0.35	ug/L			07/26/18 15:33	1
trans-1,3-Dichloropropene	<0.36		1.0	0.36	ug/L			07/26/18 15:33	1
Trichloroethene	<0.16		0.50	0.16	ug/L			07/26/18 15:33	1
Trichlorofluoromethane	<0.43		1.0	0.43	ug/L			07/26/18 15:33	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			07/26/18 15:33	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			07/26/18 15:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		75 - 126					07/26/18 15:33	1
4-Bromofluorobenzene (Surr)	101		72 - 124					07/26/18 15:33	1
Dibromofluoromethane	100		75 - 120					07/26/18 15:33	1
Toluene-d8 (Surr)	98		75 - 120					07/26/18 15:33	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.4		1.7	0.17	ng/L		07/23/18 06:36	07/27/18 13:55	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	B	1.7	0.14	ng/L		07/23/18 06:36	07/27/18 13:55	1
Perfluoroheptanoic acid (PFHpA)	1.9		1.7	0.21	ng/L		07/23/18 06:36	07/27/18 13:55	1
Perfluorooctanoic acid (PFOA)	3.4		1.7	0.72	ng/L		07/23/18 06:36	07/27/18 13:55	1
Perfluorooctanesulfonic acid (PFOS)	2.2		1.7	0.46	ng/L		07/23/18 06:36	07/27/18 13:55	1
Perfluorononanoic acid (PFNA)	0.91	J	1.7	0.23	ng/L		07/23/18 06:36	07/27/18 13:55	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	36		25 - 150				07/23/18 06:36	07/27/18 13:55	1
13C4-PFHpA	36		25 - 150				07/23/18 06:36	07/27/18 13:55	1
13C4 PFOA	38		25 - 150				07/23/18 06:36	07/27/18 13:55	1
13C3-PFBS	37		25 - 150				07/23/18 06:36	07/27/18 13:55	1
13C4 PFOS	33		25 - 150				07/23/18 06:36	07/27/18 13:55	1
13C5 PFNA	39		25 - 150				07/23/18 06:36	07/27/18 13:55	1

Client Sample ID: B-9 0'-2'

Date Collected: 07/16/18 13:00

Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-3

Matrix: Solid

Percent Solids: 87.2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<29		64	29	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,1,1-Trichloroethane	<24		64	24	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,1,1,2,2-Tetrachloroethane	<25		64	25	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,1,2-Trichloroethane	<22		64	22	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50

TestAmerica Sacramento

Client Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-9 0'-2'
Date Collected: 07/16/18 13:00
Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-3
Matrix: Solid
Percent Solids: 87.2

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<26		64	26	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,1-Dichloroethene	<25		64	25	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,1-Dichloropropene	<19		64	19	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,2,3-Trichlorobenzene	<29		64	29	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,2,3-Trichloropropane	<26		64	26	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,2,4-Trichlorobenzene	<22		64	22	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,2,4-Trimethylbenzene	<23		64	23	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,2-Dibromo-3-Chloropropane	<130		320	130	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,2-Dibromoethane	<25		64	25	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,2-Dichlorobenzene	<21		64	21	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,2-Dichloroethane	<25		64	25	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,2-Dichloropropane	<27		64	27	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,3,5-Trimethylbenzene	<24		64	24	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,3-Dichlorobenzene	<25		64	25	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,3-Dichloropropane	<23		64	23	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
1,4-Dichlorobenzene	<23		64	23	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
2,2-Dichloropropane	<28		64	28	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
2-Chlorotoluene	<20		64	20	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
4-Chlorotoluene	<22		64	22	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Benzene	<9.3		16	9.3	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Bromobenzene	<23		64	23	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Bromochloromethane	<27		64	27	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Bromodichloromethane	<24		64	24	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Bromoform	<31		64	31	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Bromomethane	<51		130	51	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Carbon tetrachloride	<24		64	24	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Chlorobenzene	<25		64	25	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Chloroethane	<32		64	32	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Chloroform	<24		130	24	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Chloromethane	<20		64	20	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
cis-1,2-Dichloroethene	<26		64	26	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
cis-1,3-Dichloropropene	<27		64	27	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Dibromochloromethane	<31		64	31	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Dibromomethane	<17		64	17	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Dichlorodifluoromethane	<43		130	43	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Ethylbenzene	<12		16	12	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Hexachlorobutadiene	<28		64	28	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Isopropyl ether	<18		64	18	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Isopropylbenzene	<24		64	24	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Methyl tert-butyl ether	<25		64	25	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Methylene Chloride	<100		320	100	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Naphthalene	<21		64	21	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
n-Butylbenzene	<25 *		64	25	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
N-Propylbenzene	<26		64	26	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
p-Isopropyltoluene	<23		64	23	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
sec-Butylbenzene	<25 *		64	25	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Styrene	<25		64	25	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
tert-Butylbenzene	<25		64	25	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Tetrachloroethene	<24		64	24	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50

TestAmerica Sacramento

Client Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-9 0'-2'
Date Collected: 07/16/18 13:00
Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-3
Matrix: Solid
Percent Solids: 87.2

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	25		16	9.4	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
trans-1,2-Dichloroethene	<22		64	22	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
trans-1,3-Dichloropropene	<23		64	23	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Trichloroethene	<10		32	10	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Trichlorofluoromethane	<27		64	27	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Vinyl chloride	<17		64	17	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50
Xylenes, Total	<14		32	14	ug/Kg	☼	07/30/18 11:41	07/30/18 15:21	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		75 - 126	07/30/18 11:41	07/30/18 15:21	50
4-Bromofluorobenzene (Surr)	99		72 - 124	07/30/18 11:41	07/30/18 15:21	50
Dibromofluoromethane	82		75 - 120	07/30/18 11:41	07/30/18 15:21	50
Toluene-d8 (Surr)	98		75 - 120	07/30/18 11:41	07/30/18 15:21	50

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	<0.028		0.23	0.028	ug/Kg	☼	07/26/18 09:48	08/04/18 07:30	1
Perfluorohexanesulfonic acid (PFHxS)	0.040	J	0.23	0.035	ug/Kg	☼	07/26/18 09:48	08/04/18 07:30	1
Perfluoroheptanoic acid (PFHpA)	<0.033		0.23	0.033	ug/Kg	☼	07/26/18 09:48	08/04/18 07:30	1
Perfluorooctanoic acid (PFOA)	<0.098		0.23	0.098	ug/Kg	☼	07/26/18 09:48	08/04/18 07:30	1
Perfluorooctanesulfonic acid (PFOS)	<0.23	*	0.57	0.23	ug/Kg	☼	07/26/18 09:48	08/04/18 07:30	1
Perfluorononanoic acid (PFNA)	<0.041		0.23	0.041	ug/Kg	☼	07/26/18 09:48	08/04/18 07:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	78		25 - 150	07/26/18 09:48	08/04/18 07:30	1
13C4-PFHpA	89		25 - 150	07/26/18 09:48	08/04/18 07:30	1
13C4 PFOA	84		25 - 150	07/26/18 09:48	08/04/18 07:30	1
13C3-PFBS	66		25 - 150	07/26/18 09:48	08/04/18 07:30	1
13C4 PFOS	74		25 - 150	07/26/18 09:48	08/04/18 07:30	1
13C5 PFNA	89		25 - 150	07/26/18 09:48	08/04/18 07:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	12.8		0.1	0.1	%			07/20/18 12:10	1
Percent Solids	87.2		0.1	0.1	%			07/20/18 12:10	1

Client Sample ID: B-9 GW
Date Collected: 07/17/18 14:30
Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<0.46		1.0	0.46	ug/L			07/26/18 16:02	1
1,1,1-Trichloroethane	<0.38		1.0	0.38	ug/L			07/26/18 16:02	1
1,1,2,2-Tetrachloroethane	<0.40		1.0	0.40	ug/L			07/26/18 16:02	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			07/26/18 16:02	1
1,1-Dichloroethane	<0.41		1.0	0.41	ug/L			07/26/18 16:02	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			07/26/18 16:02	1
1,1-Dichloropropene	<0.30		1.0	0.30	ug/L			07/26/18 16:02	1
1,2,3-Trichlorobenzene	<0.46		1.0	0.46	ug/L			07/26/18 16:02	1

TestAmerica Sacramento

Client Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-9 GW

Lab Sample ID: 320-41248-4

Date Collected: 07/17/18 14:30

Matrix: Water

Date Received: 07/18/18 09:35

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	<0.41		1.0	0.41	ug/L			07/26/18 16:02	1
1,2,4-Trichlorobenzene	<0.34		1.0	0.34	ug/L			07/26/18 16:02	1
1,2,4-Trimethylbenzene	<0.36		1.0	0.36	ug/L			07/26/18 16:02	1
1,2-Dibromo-3-Chloropropane	<2.0		5.0	2.0	ug/L			07/26/18 16:02	1
1,2-Dibromoethane	<0.39		1.0	0.39	ug/L			07/26/18 16:02	1
1,2-Dichlorobenzene	<0.33		1.0	0.33	ug/L			07/26/18 16:02	1
1,2-Dichloroethane	<0.39		1.0	0.39	ug/L			07/26/18 16:02	1
1,2-Dichloropropane	<0.43		1.0	0.43	ug/L			07/26/18 16:02	1
1,3,5-Trimethylbenzene	<0.25		1.0	0.25	ug/L			07/26/18 16:02	1
1,3-Dichlorobenzene	<0.40		1.0	0.40	ug/L			07/26/18 16:02	1
1,3-Dichloropropane	<0.36		1.0	0.36	ug/L			07/26/18 16:02	1
1,4-Dichlorobenzene	<0.36		1.0	0.36	ug/L			07/26/18 16:02	1
2,2-Dichloropropane	<0.44		1.0	0.44	ug/L			07/26/18 16:02	1
2-Butanone (MEK)	<2.1		5.0	2.1	ug/L			07/26/18 16:02	1
2-Chlorotoluene	<0.31		1.0	0.31	ug/L			07/26/18 16:02	1
4-Chlorotoluene	<0.35		1.0	0.35	ug/L			07/26/18 16:02	1
Acetone	6.0	cn	5.0	1.7	ug/L			07/26/18 16:02	1
Benzene	<0.15		0.50	0.15	ug/L			07/26/18 16:02	1
Bromobenzene	<0.36		1.0	0.36	ug/L			07/26/18 16:02	1
Bromochloromethane	<0.43		1.0	0.43	ug/L			07/26/18 16:02	1
Bromodichloromethane	<0.37		1.0	0.37	ug/L			07/26/18 16:02	1
Bromoform	<0.48		1.0	0.48	ug/L			07/26/18 16:02	1
Bromomethane	<0.80		2.0	0.80	ug/L			07/26/18 16:02	1
Carbon disulfide	<0.45		2.0	0.45	ug/L			07/26/18 16:02	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			07/26/18 16:02	1
Chlorobenzene	<0.39		1.0	0.39	ug/L			07/26/18 16:02	1
Chloroethane	<0.51		1.0	0.51	ug/L			07/26/18 16:02	1
Chloroform	<0.37		2.0	0.37	ug/L			07/26/18 16:02	1
Chloromethane	<0.32		1.0	0.32	ug/L			07/26/18 16:02	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			07/26/18 16:02	1
cis-1,3-Dichloropropene	<0.42		1.0	0.42	ug/L			07/26/18 16:02	1
Dibromochloromethane	<0.49		1.0	0.49	ug/L			07/26/18 16:02	1
Dibromomethane	<0.27		1.0	0.27	ug/L			07/26/18 16:02	1
Dichlorodifluoromethane	<0.67		2.0	0.67	ug/L			07/26/18 16:02	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/26/18 16:02	1
Hexachlorobutadiene	<0.45		1.0	0.45	ug/L			07/26/18 16:02	1
Isopropyl ether	<0.28		1.0	0.28	ug/L			07/26/18 16:02	1
Isopropylbenzene	<0.39		1.0	0.39	ug/L			07/26/18 16:02	1
Methyl tert-butyl ether	<0.39		1.0	0.39	ug/L			07/26/18 16:02	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			07/26/18 16:02	1
Naphthalene	<0.34		1.0	0.34	ug/L			07/26/18 16:02	1
n-Butylbenzene	<0.39		1.0	0.39	ug/L			07/26/18 16:02	1
N-Propylbenzene	<0.41		1.0	0.41	ug/L			07/26/18 16:02	1
p-Isopropyltoluene	<0.36		1.0	0.36	ug/L			07/26/18 16:02	1
sec-Butylbenzene	<0.40		1.0	0.40	ug/L			07/26/18 16:02	1
Styrene	<0.39		1.0	0.39	ug/L			07/26/18 16:02	1
tert-Butylbenzene	<0.40		1.0	0.40	ug/L			07/26/18 16:02	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			07/26/18 16:02	1
Tetrahydrofuran	<1.9		10	1.9	ug/L			07/26/18 16:02	1

TestAmerica Sacramento

Client Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-9 GW

Lab Sample ID: 320-41248-4

Date Collected: 07/17/18 14:30

Matrix: Water

Date Received: 07/18/18 09:35

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	0.23	J	0.50	0.15	ug/L			07/26/18 16:02	1
trans-1,2-Dichloroethene	<0.35		1.0	0.35	ug/L			07/26/18 16:02	1
trans-1,3-Dichloropropene	<0.36		1.0	0.36	ug/L			07/26/18 16:02	1
Trichloroethene	<0.16		0.50	0.16	ug/L			07/26/18 16:02	1
Trichlorofluoromethane	<0.43		1.0	0.43	ug/L			07/26/18 16:02	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			07/26/18 16:02	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			07/26/18 16:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>1,2-Dichloroethane-d4 (Surr)</i>	93		75 - 126		07/26/18 16:02	1
<i>4-Bromofluorobenzene (Surr)</i>	102		72 - 124		07/26/18 16:02	1
<i>Dibromofluoromethane</i>	101		75 - 120		07/26/18 16:02	1
<i>Toluene-d8 (Surr)</i>	99		75 - 120		07/26/18 16:02	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	4.8		1.6	0.16	ng/L		07/23/18 06:36	07/24/18 04:33	1
Perfluorohexanesulfonic acid (PFHxS)	0.67	J B	1.6	0.14	ng/L		07/23/18 06:36	07/24/18 04:33	1
Perfluoroheptanoic acid (PFHpA)	3.7		1.6	0.20	ng/L		07/23/18 06:36	07/24/18 04:33	1
Perfluorooctanoic acid (PFOA)	4.6		1.6	0.68	ng/L		07/23/18 06:36	07/24/18 04:33	1
Perfluorooctanesulfonic acid (PFOS)	7.5		1.6	0.43	ng/L		07/23/18 06:36	07/24/18 04:33	1
Perfluorononanoic acid (PFNA)	0.97	J	1.6	0.22	ng/L		07/23/18 06:36	07/24/18 04:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>18O2 PFHxS</i>	75		25 - 150	07/23/18 06:36	07/24/18 04:33	1
<i>13C4-PFHxA</i>	73		25 - 150	07/23/18 06:36	07/24/18 04:33	1
<i>13C4 PFOA</i>	77		25 - 150	07/23/18 06:36	07/24/18 04:33	1
<i>13C3-PFBS</i>	71		25 - 150	07/23/18 06:36	07/24/18 04:33	1
<i>13C4 PFOS</i>	72		25 - 150	07/23/18 06:36	07/24/18 04:33	1
<i>13C5 PFNA</i>	78		25 - 150	07/23/18 06:36	07/24/18 04:33	1

Client Sample ID: B-11 6'-8'

Lab Sample ID: 320-41248-5

Date Collected: 07/16/18 15:30

Matrix: Solid

Date Received: 07/18/18 09:35

Percent Solids: 91.6

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<22		48	22	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,1,1-Trichloroethane	<18		48	18	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,1,2,2-Tetrachloroethane	<19		48	19	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,1,2-Trichloroethane	<17		48	17	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,1-Dichloroethane	<20		48	20	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,1-Dichloroethene	<19		48	19	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,1-Dichloropropene	<14		48	14	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,2,3-Trichlorobenzene	<22		48	22	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,2,3-Trichloropropane	<20		48	20	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,2,4-Trichlorobenzene	<16		48	16	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,2,4-Trimethylbenzene	<17		48	17	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,2-Dibromo-3-Chloropropane	<96		240	96	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50

TestAmerica Sacramento

Client Sample Results

Client: Strand Associates, Inc.
 Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-11 6'-8'

Lab Sample ID: 320-41248-5

Date Collected: 07/16/18 15:30

Matrix: Solid

Date Received: 07/18/18 09:35

Percent Solids: 91.6

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane	<19		48	19	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,2-Dichlorobenzene	<16		48	16	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,2-Dichloroethane	<19		48	19	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,2-Dichloropropane	<21		48	21	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,3,5-Trimethylbenzene	<18		48	18	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,3-Dichlorobenzene	<19		48	19	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,3-Dichloropropane	<17		48	17	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
1,4-Dichlorobenzene	<18		48	18	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
2,2-Dichloropropane	<21		48	21	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
2-Chlorotoluene	<15		48	15	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
4-Chlorotoluene	<17		48	17	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Benzene	<7.0		12	7.0	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Bromobenzene	<17		48	17	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Bromochloromethane	<21		48	21	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Bromodichloromethane	<18		48	18	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Bromoform	<23		48	23	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Bromomethane	<38		96	38	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Carbon tetrachloride	<18		48	18	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Chlorobenzene	<19		48	19	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Chloroethane	<24		48	24	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Chloroform	<18		96	18	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Chloromethane	<15		48	15	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
cis-1,2-Dichloroethene	<20		48	20	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
cis-1,3-Dichloropropene	<20		48	20	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Dibromochloromethane	<23		48	23	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Dibromomethane	<13		48	13	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Dichlorodifluoromethane	<32		96	32	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Ethylbenzene	<8.8		12	8.8	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Hexachlorobutadiene	<21		48	21	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Isopropyl ether	<13		48	13	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Isopropylbenzene	<18		48	18	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Methyl tert-butyl ether	<19		48	19	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Methylene Chloride	<78		240	78	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Naphthalene	<16		48	16	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
n-Butylbenzene	<19 *		48	19	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
N-Propylbenzene	<20		48	20	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
p-Isopropyltoluene	<17		48	17	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
sec-Butylbenzene	<19 *		48	19	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Styrene	<19		48	19	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
tert-Butylbenzene	<19		48	19	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Tetrachloroethene	<18		48	18	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Toluene	<7.1		12	7.1	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
trans-1,2-Dichloroethene	<17		48	17	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
trans-1,3-Dichloropropene	<17		48	17	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Trichloroethene	<7.9		24	7.9	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Trichlorofluoromethane	<21		48	21	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Vinyl chloride	<13		48	13	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50
Xylenes, Total	<11		24	11	ug/Kg	☼	07/30/18 11:41	07/30/18 15:49	50

TestAmerica Sacramento

Client Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-11 6'-8'

Date Collected: 07/16/18 15:30

Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-5

Matrix: Solid

Percent Solids: 91.6

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		75 - 126	07/30/18 11:41	07/30/18 15:49	50
4-Bromofluorobenzene (Surr)	97		72 - 124	07/30/18 11:41	07/30/18 15:49	50
Dibromofluoromethane	83		75 - 120	07/30/18 11:41	07/30/18 15:49	50
Toluene-d8 (Surr)	99		75 - 120	07/30/18 11:41	07/30/18 15:49	50

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	<0.027		0.21	0.027	ug/Kg	☼	07/26/18 09:48	08/04/18 07:38	1
Perfluorohexanesulfonic acid (PFHxS)	<0.033		0.21	0.033	ug/Kg	☼	07/26/18 09:48	08/04/18 07:38	1
Perfluoroheptanoic acid (PFHpA)	<0.031		0.21	0.031	ug/Kg	☼	07/26/18 09:48	08/04/18 07:38	1
Perfluorooctanoic acid (PFOA)	<0.092		0.21	0.092	ug/Kg	☼	07/26/18 09:48	08/04/18 07:38	1
Perfluorooctanesulfonic acid (PFOS)	<0.21	*	0.54	0.21	ug/Kg	☼	07/26/18 09:48	08/04/18 07:38	1
Perfluorononanoic acid (PFNA)	<0.039		0.21	0.039	ug/Kg	☼	07/26/18 09:48	08/04/18 07:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	80		25 - 150	07/26/18 09:48	08/04/18 07:38	1
13C4-PFHpA	96		25 - 150	07/26/18 09:48	08/04/18 07:38	1
13C4 PFOA	86		25 - 150	07/26/18 09:48	08/04/18 07:38	1
13C3-PFBS	69		25 - 150	07/26/18 09:48	08/04/18 07:38	1
13C4 PFOS	74		25 - 150	07/26/18 09:48	08/04/18 07:38	1
13C5 PFNA	89		25 - 150	07/26/18 09:48	08/04/18 07:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	8.4		0.1	0.1	%			07/20/18 12:10	1
Percent Solids	91.6		0.1	0.1	%			07/20/18 12:10	1

Client Sample ID: B-11 GW

Date Collected: 07/17/18 10:00

Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-6

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<0.46		1.0	0.46	ug/L			07/26/18 16:31	1
1,1,1-Trichloroethane	<0.38		1.0	0.38	ug/L			07/26/18 16:31	1
1,1,2,2-Tetrachloroethane	<0.40		1.0	0.40	ug/L			07/26/18 16:31	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			07/26/18 16:31	1
1,1-Dichloroethane	<0.41		1.0	0.41	ug/L			07/26/18 16:31	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			07/26/18 16:31	1
1,1-Dichloropropene	<0.30		1.0	0.30	ug/L			07/26/18 16:31	1
1,2,3-Trichlorobenzene	<0.46		1.0	0.46	ug/L			07/26/18 16:31	1
1,2,3-Trichloropropane	<0.41		1.0	0.41	ug/L			07/26/18 16:31	1
1,2,4-Trichlorobenzene	<0.34		1.0	0.34	ug/L			07/26/18 16:31	1
1,2,4-Trimethylbenzene	<0.36		1.0	0.36	ug/L			07/26/18 16:31	1
1,2-Dibromo-3-Chloropropane	<2.0		5.0	2.0	ug/L			07/26/18 16:31	1
1,2-Dibromoethane	<0.39		1.0	0.39	ug/L			07/26/18 16:31	1
1,2-Dichlorobenzene	<0.33		1.0	0.33	ug/L			07/26/18 16:31	1
1,2-Dichloroethane	<0.39		1.0	0.39	ug/L			07/26/18 16:31	1
1,2-Dichloropropane	<0.43		1.0	0.43	ug/L			07/26/18 16:31	1
1,3,5-Trimethylbenzene	<0.25		1.0	0.25	ug/L			07/26/18 16:31	1
1,3-Dichlorobenzene	<0.40		1.0	0.40	ug/L			07/26/18 16:31	1

TestAmerica Sacramento

Client Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-11 GW

Lab Sample ID: 320-41248-6

Date Collected: 07/17/18 10:00

Matrix: Water

Date Received: 07/18/18 09:35

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichloropropane	<0.36		1.0	0.36	ug/L			07/26/18 16:31	1
1,4-Dichlorobenzene	<0.36		1.0	0.36	ug/L			07/26/18 16:31	1
2,2-Dichloropropane	<0.44		1.0	0.44	ug/L			07/26/18 16:31	1
2-Butanone (MEK)	<2.1		5.0	2.1	ug/L			07/26/18 16:31	1
2-Chlorotoluene	<0.31		1.0	0.31	ug/L			07/26/18 16:31	1
4-Chlorotoluene	<0.35		1.0	0.35	ug/L			07/26/18 16:31	1
Acetone	<1.7		5.0	1.7	ug/L			07/26/18 16:31	1
Benzene	<0.15		0.50	0.15	ug/L			07/26/18 16:31	1
Bromobenzene	<0.36		1.0	0.36	ug/L			07/26/18 16:31	1
Bromochloromethane	<0.43		1.0	0.43	ug/L			07/26/18 16:31	1
Bromodichloromethane	<0.37		1.0	0.37	ug/L			07/26/18 16:31	1
Bromoform	<0.48		1.0	0.48	ug/L			07/26/18 16:31	1
Bromomethane	<0.80		2.0	0.80	ug/L			07/26/18 16:31	1
Carbon disulfide	<0.45		2.0	0.45	ug/L			07/26/18 16:31	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			07/26/18 16:31	1
Chlorobenzene	<0.39		1.0	0.39	ug/L			07/26/18 16:31	1
Chloroethane	<0.51		1.0	0.51	ug/L			07/26/18 16:31	1
Chloroform	<0.37		2.0	0.37	ug/L			07/26/18 16:31	1
Chloromethane	<0.32		1.0	0.32	ug/L			07/26/18 16:31	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			07/26/18 16:31	1
cis-1,3-Dichloropropene	<0.42		1.0	0.42	ug/L			07/26/18 16:31	1
Dibromochloromethane	<0.49		1.0	0.49	ug/L			07/26/18 16:31	1
Dibromomethane	<0.27		1.0	0.27	ug/L			07/26/18 16:31	1
Dichlorodifluoromethane	<0.67		2.0	0.67	ug/L			07/26/18 16:31	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/26/18 16:31	1
Hexachlorobutadiene	<0.45		1.0	0.45	ug/L			07/26/18 16:31	1
Isopropyl ether	<0.28		1.0	0.28	ug/L			07/26/18 16:31	1
Isopropylbenzene	<0.39		1.0	0.39	ug/L			07/26/18 16:31	1
Methyl tert-butyl ether	<0.39		1.0	0.39	ug/L			07/26/18 16:31	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			07/26/18 16:31	1
Naphthalene	<0.34		1.0	0.34	ug/L			07/26/18 16:31	1
n-Butylbenzene	<0.39		1.0	0.39	ug/L			07/26/18 16:31	1
N-Propylbenzene	<0.41		1.0	0.41	ug/L			07/26/18 16:31	1
p-Isopropyltoluene	<0.36		1.0	0.36	ug/L			07/26/18 16:31	1
sec-Butylbenzene	<0.40		1.0	0.40	ug/L			07/26/18 16:31	1
Styrene	<0.39		1.0	0.39	ug/L			07/26/18 16:31	1
tert-Butylbenzene	<0.40		1.0	0.40	ug/L			07/26/18 16:31	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			07/26/18 16:31	1
Tetrahydrofuran	<1.9		10	1.9	ug/L			07/26/18 16:31	1
Toluene	0.54		0.50	0.15	ug/L			07/26/18 16:31	1
trans-1,2-Dichloroethene	<0.35		1.0	0.35	ug/L			07/26/18 16:31	1
trans-1,3-Dichloropropene	<0.36		1.0	0.36	ug/L			07/26/18 16:31	1
Trichloroethene	<0.16		0.50	0.16	ug/L			07/26/18 16:31	1
Trichlorofluoromethane	<0.43		1.0	0.43	ug/L			07/26/18 16:31	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			07/26/18 16:31	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			07/26/18 16:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		75 - 126		07/26/18 16:31	1
4-Bromofluorobenzene (Surr)	102		72 - 124		07/26/18 16:31	1

TestAmerica Sacramento

Client Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-11 GW

Date Collected: 07/17/18 10:00

Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-6

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane	101		75 - 120		07/26/18 16:31	1
Toluene-d8 (Surr)	97		75 - 120		07/26/18 16:31	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	0.33	J	1.6	0.16	ng/L		07/23/18 06:36	07/24/18 04:40	1
Perfluorohexanesulfonic acid (PFHxS)	<0.14		1.6	0.14	ng/L		07/23/18 06:36	07/24/18 04:40	1
Perfluoroheptanoic acid (PFHpA)	0.60	J	1.6	0.20	ng/L		07/23/18 06:36	07/24/18 04:40	1
Perfluorooctanoic acid (PFOA)	0.81	J	1.6	0.69	ng/L		07/23/18 06:36	07/24/18 04:40	1
Perfluorooctanesulfonic acid (PFOS)	<0.44		1.6	0.44	ng/L		07/23/18 06:36	07/24/18 04:40	1
Perfluorononanoic acid (PFNA)	<0.22		1.6	0.22	ng/L		07/23/18 06:36	07/24/18 04:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	55		25 - 150	07/23/18 06:36	07/24/18 04:40	1
13C4-PFHpA	58		25 - 150	07/23/18 06:36	07/24/18 04:40	1
13C4 PFOA	56		25 - 150	07/23/18 06:36	07/24/18 04:40	1
13C3-PFBS	54		25 - 150	07/23/18 06:36	07/24/18 04:40	1
13C4 PFOS	52		25 - 150	07/23/18 06:36	07/24/18 04:40	1
13C5 PFNA	55		25 - 150	07/23/18 06:36	07/24/18 04:40	1

Client Sample ID: B-13 0'-2'

Date Collected: 07/17/18 12:15

Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-7

Matrix: Solid

Percent Solids: 82.1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<26		56	26	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,1,1-Trichloroethane	<21		56	21	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,1,2,2-Tetrachloroethane	<22		56	22	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,1,2-Trichloroethane	<20		56	20	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,1-Dichloroethane	<23		56	23	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,1-Dichloroethene	<22		56	22	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,1-Dichloropropene	<17		56	17	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,2,3-Trichlorobenzene	<26		56	26	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,2,3-Trichloropropane	<23		56	23	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,2,4-Trichlorobenzene	<19		56	19	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,2,4-Trimethylbenzene	<20		56	20	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,2-Dibromo-3-Chloropropane	<110		280	110	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,2-Dibromoethane	<22		56	22	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,2-Dichlorobenzene	<19		56	19	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,2-Dichloroethane	<22		56	22	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,2-Dichloropropane	<24		56	24	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,3,5-Trimethylbenzene	<21		56	21	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,3-Dichlorobenzene	<22		56	22	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,3-Dichloropropane	<20		56	20	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
1,4-Dichlorobenzene	<20		56	20	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
2,2-Dichloropropane	<25		56	25	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
2-Chlorotoluene	<18		56	18	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
4-Chlorotoluene	<20		56	20	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50

TestAmerica Sacramento

Client Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-13 0'-2'

Lab Sample ID: 320-41248-7

Date Collected: 07/17/18 12:15

Matrix: Solid

Date Received: 07/18/18 09:35

Percent Solids: 82.1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<8.2		14	8.2	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Bromobenzene	<20		56	20	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Bromochloromethane	<24		56	24	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Bromodichloromethane	<21		56	21	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Bromoform	<27		56	27	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Bromomethane	<45		110	45	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Carbon tetrachloride	<22		56	22	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Chlorobenzene	<22		56	22	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Chloroethane	<28		56	28	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Chloroform	<21		110	21	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Chloromethane	<18		56	18	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
cis-1,2-Dichloroethene	<23		56	23	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
cis-1,3-Dichloropropene	<23		56	23	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Dibromochloromethane	<27		56	27	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Dibromomethane	<15		56	15	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Dichlorodifluoromethane	<38		110	38	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Ethylbenzene	<10		14	10	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Hexachlorobutadiene	<25		56	25	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Isopropyl ether	<15		56	15	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Isopropylbenzene	<22		56	22	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Methyl tert-butyl ether	<22		56	22	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Methylene Chloride	<92		280	92	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Naphthalene	<19		56	19	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
n-Butylbenzene	<22 *		56	22	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
N-Propylbenzene	<23		56	23	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
p-Isopropyltoluene	<20		56	20	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
sec-Butylbenzene	<22 *		56	22	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Styrene	<22		56	22	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
tert-Butylbenzene	<22		56	22	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Tetrachloroethene	<21		56	21	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Toluene	<8.3		14	8.3	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
trans-1,2-Dichloroethene	<20		56	20	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
trans-1,3-Dichloropropene	<20		56	20	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Trichloroethene	<9.2		28	9.2	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Trichlorofluoromethane	<24		56	24	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Vinyl chloride	<15		56	15	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50
Xylenes, Total	<12		28	12	ug/Kg	☼	07/30/18 11:41	07/30/18 16:16	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		75 - 126	07/30/18 11:41	07/30/18 16:16	50
4-Bromofluorobenzene (Surr)	100		72 - 124	07/30/18 11:41	07/30/18 16:16	50
Dibromofluoromethane	82		75 - 120	07/30/18 11:41	07/30/18 16:16	50
Toluene-d8 (Surr)	100		75 - 120	07/30/18 11:41	07/30/18 16:16	50

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	<0.030		0.24	0.030	ug/Kg	☼	07/26/18 09:48	08/04/18 07:46	1
Perfluorohexanesulfonic acid (PFHxS)	<0.038		0.24	0.038	ug/Kg	☼	07/26/18 09:48	08/04/18 07:46	1
Perfluoroheptanoic acid (PFHpA)	<0.035		0.24	0.035	ug/Kg	☼	07/26/18 09:48	08/04/18 07:46	1
Perfluorooctanoic acid (PFOA)	<0.10		0.24	0.10	ug/Kg	☼	07/26/18 09:48	08/04/18 07:46	1

TestAmerica Sacramento

Client Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-13 0'-2'

Lab Sample ID: 320-41248-7

Date Collected: 07/17/18 12:15

Matrix: Solid

Date Received: 07/18/18 09:35

Percent Solids: 82.1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.37	J B *	0.61	0.24	ug/Kg	☼	07/26/18 09:48	08/04/18 07:46	1
Perfluorononanoic acid (PFNA)	0.045	J	0.24	0.044	ug/Kg	☼	07/26/18 09:48	08/04/18 07:46	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	79		25 - 150				07/26/18 09:48	08/04/18 07:46	1
13C4-PFHpA	86		25 - 150				07/26/18 09:48	08/04/18 07:46	1
13C4 PFOA	80		25 - 150				07/26/18 09:48	08/04/18 07:46	1
13C3-PFBS	67		25 - 150				07/26/18 09:48	08/04/18 07:46	1
13C4 PFOS	73		25 - 150				07/26/18 09:48	08/04/18 07:46	1
13C5 PFNA	85		25 - 150				07/26/18 09:48	08/04/18 07:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	17.9		0.1	0.1	%			07/20/18 12:10	1
Percent Solids	82.1		0.1	0.1	%			07/20/18 12:10	1

Client Sample ID: B-13 GW

Lab Sample ID: 320-41248-8

Date Collected: 07/17/18 13:30

Matrix: Water

Date Received: 07/18/18 09:35

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<0.46		1.0	0.46	ug/L			07/26/18 17:00	1
1,1,1-Trichloroethane	<0.38		1.0	0.38	ug/L			07/26/18 17:00	1
1,1,2,2-Tetrachloroethane	<0.40		1.0	0.40	ug/L			07/26/18 17:00	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			07/26/18 17:00	1
1,1-Dichloroethane	<0.41		1.0	0.41	ug/L			07/26/18 17:00	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			07/26/18 17:00	1
1,1-Dichloropropene	<0.30		1.0	0.30	ug/L			07/26/18 17:00	1
1,2,3-Trichlorobenzene	<0.46		1.0	0.46	ug/L			07/26/18 17:00	1
1,2,3-Trichloropropane	<0.41		1.0	0.41	ug/L			07/26/18 17:00	1
1,2,4-Trichlorobenzene	<0.34		1.0	0.34	ug/L			07/26/18 17:00	1
1,2,4-Trimethylbenzene	<0.36		1.0	0.36	ug/L			07/26/18 17:00	1
1,2-Dibromo-3-Chloropropane	<2.0		5.0	2.0	ug/L			07/26/18 17:00	1
1,2-Dibromoethane	<0.39		1.0	0.39	ug/L			07/26/18 17:00	1
1,2-Dichlorobenzene	<0.33		1.0	0.33	ug/L			07/26/18 17:00	1
1,2-Dichloroethane	<0.39		1.0	0.39	ug/L			07/26/18 17:00	1
1,2-Dichloropropane	<0.43		1.0	0.43	ug/L			07/26/18 17:00	1
1,3,5-Trimethylbenzene	<0.25		1.0	0.25	ug/L			07/26/18 17:00	1
1,3-Dichlorobenzene	<0.40		1.0	0.40	ug/L			07/26/18 17:00	1
1,3-Dichloropropane	<0.36		1.0	0.36	ug/L			07/26/18 17:00	1
1,4-Dichlorobenzene	<0.36		1.0	0.36	ug/L			07/26/18 17:00	1
2,2-Dichloropropane	<0.44		1.0	0.44	ug/L			07/26/18 17:00	1
2-Butanone (MEK)	<2.1		5.0	2.1	ug/L			07/26/18 17:00	1
2-Chlorotoluene	<0.31		1.0	0.31	ug/L			07/26/18 17:00	1
4-Chlorotoluene	<0.35		1.0	0.35	ug/L			07/26/18 17:00	1
Acetone	10	cn	5.0	1.7	ug/L			07/26/18 17:00	1
Benzene	<0.15		0.50	0.15	ug/L			07/26/18 17:00	1
Bromobenzene	<0.36		1.0	0.36	ug/L			07/26/18 17:00	1
Bromochloromethane	<0.43		1.0	0.43	ug/L			07/26/18 17:00	1

TestAmerica Sacramento

Client Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-13 GW

Lab Sample ID: 320-41248-8

Date Collected: 07/17/18 13:30

Matrix: Water

Date Received: 07/18/18 09:35

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	<0.37		1.0	0.37	ug/L			07/26/18 17:00	1
Bromoform	<0.48		1.0	0.48	ug/L			07/26/18 17:00	1
Bromomethane	<0.80		2.0	0.80	ug/L			07/26/18 17:00	1
Carbon disulfide	<0.45		2.0	0.45	ug/L			07/26/18 17:00	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			07/26/18 17:00	1
Chlorobenzene	<0.39		1.0	0.39	ug/L			07/26/18 17:00	1
Chloroethane	<0.51		1.0	0.51	ug/L			07/26/18 17:00	1
Chloroform	<0.37		2.0	0.37	ug/L			07/26/18 17:00	1
Chloromethane	<0.32		1.0	0.32	ug/L			07/26/18 17:00	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			07/26/18 17:00	1
cis-1,3-Dichloropropene	<0.42		1.0	0.42	ug/L			07/26/18 17:00	1
Dibromochloromethane	<0.49		1.0	0.49	ug/L			07/26/18 17:00	1
Dibromomethane	<0.27		1.0	0.27	ug/L			07/26/18 17:00	1
Dichlorodifluoromethane	<0.67		2.0	0.67	ug/L			07/26/18 17:00	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/26/18 17:00	1
Hexachlorobutadiene	<0.45		1.0	0.45	ug/L			07/26/18 17:00	1
Isopropyl ether	<0.28		1.0	0.28	ug/L			07/26/18 17:00	1
Isopropylbenzene	<0.39		1.0	0.39	ug/L			07/26/18 17:00	1
Methyl tert-butyl ether	<0.39		1.0	0.39	ug/L			07/26/18 17:00	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			07/26/18 17:00	1
Naphthalene	<0.34		1.0	0.34	ug/L			07/26/18 17:00	1
n-Butylbenzene	<0.39		1.0	0.39	ug/L			07/26/18 17:00	1
N-Propylbenzene	<0.41		1.0	0.41	ug/L			07/26/18 17:00	1
p-Isopropyltoluene	<0.36		1.0	0.36	ug/L			07/26/18 17:00	1
sec-Butylbenzene	<0.40		1.0	0.40	ug/L			07/26/18 17:00	1
Styrene	<0.39		1.0	0.39	ug/L			07/26/18 17:00	1
tert-Butylbenzene	<0.40		1.0	0.40	ug/L			07/26/18 17:00	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			07/26/18 17:00	1
Tetrahydrofuran	<1.9		10	1.9	ug/L			07/26/18 17:00	1
Toluene	0.41	J	0.50	0.15	ug/L			07/26/18 17:00	1
trans-1,2-Dichloroethene	<0.35		1.0	0.35	ug/L			07/26/18 17:00	1
trans-1,3-Dichloropropene	<0.36		1.0	0.36	ug/L			07/26/18 17:00	1
Trichloroethene	<0.16		0.50	0.16	ug/L			07/26/18 17:00	1
Trichlorofluoromethane	<0.43		1.0	0.43	ug/L			07/26/18 17:00	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			07/26/18 17:00	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			07/26/18 17:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		75 - 126		07/26/18 17:00	1
4-Bromofluorobenzene (Surr)	102		72 - 124		07/26/18 17:00	1
Dibromofluoromethane	102		75 - 120		07/26/18 17:00	1
Toluene-d8 (Surr)	96		75 - 120		07/26/18 17:00	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	0.63	J	1.7	0.17	ng/L		07/23/18 06:36	07/24/18 04:48	1
Perfluorohexanesulfonic acid (PFHxS)	0.48	J B	1.7	0.15	ng/L		07/23/18 06:36	07/24/18 04:48	1
Perfluoroheptanoic acid (PFHpA)	<0.21		1.7	0.21	ng/L		07/23/18 06:36	07/24/18 04:48	1

TestAmerica Sacramento

Client Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-13 GW

Date Collected: 07/17/18 13:30

Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-8

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.88	J	1.7	0.73	ng/L		07/23/18 06:36	07/24/18 04:48	1
Perfluorooctanesulfonic acid (PFOS)	3.4		1.7	0.46	ng/L		07/23/18 06:36	07/24/18 04:48	1
Perfluorononanoic acid (PFNA)	<0.23		1.7	0.23	ng/L		07/23/18 06:36	07/24/18 04:48	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	56		25 - 150				07/23/18 06:36	07/24/18 04:48	1
13C4-PFHpA	54		25 - 150				07/23/18 06:36	07/24/18 04:48	1
13C4 PFOA	56		25 - 150				07/23/18 06:36	07/24/18 04:48	1
13C3-PFBS	53		25 - 150				07/23/18 06:36	07/24/18 04:48	1
13C4 PFOS	57		25 - 150				07/23/18 06:36	07/24/18 04:48	1
13C5 PFNA	61		25 - 150				07/23/18 06:36	07/24/18 04:48	1

Client Sample ID: Bailer Blank

Date Collected: 07/17/18 10:30

Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-9

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<0.46		1.0	0.46	ug/L			07/26/18 17:29	1
1,1,1-Trichloroethane	<0.38		1.0	0.38	ug/L			07/26/18 17:29	1
1,1,2,2-Tetrachloroethane	<0.40		1.0	0.40	ug/L			07/26/18 17:29	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			07/26/18 17:29	1
1,1-Dichloroethane	<0.41		1.0	0.41	ug/L			07/26/18 17:29	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			07/26/18 17:29	1
1,1-Dichloropropene	<0.30		1.0	0.30	ug/L			07/26/18 17:29	1
1,2,3-Trichlorobenzene	<0.46		1.0	0.46	ug/L			07/26/18 17:29	1
1,2,3-Trichloropropane	<0.41		1.0	0.41	ug/L			07/26/18 17:29	1
1,2,4-Trichlorobenzene	<0.34		1.0	0.34	ug/L			07/26/18 17:29	1
1,2,4-Trimethylbenzene	<0.36		1.0	0.36	ug/L			07/26/18 17:29	1
1,2-Dibromo-3-Chloropropane	<2.0		5.0	2.0	ug/L			07/26/18 17:29	1
1,2-Dibromoethane	<0.39		1.0	0.39	ug/L			07/26/18 17:29	1
1,2-Dichlorobenzene	<0.33		1.0	0.33	ug/L			07/26/18 17:29	1
1,2-Dichloroethane	<0.39		1.0	0.39	ug/L			07/26/18 17:29	1
1,2-Dichloropropane	<0.43		1.0	0.43	ug/L			07/26/18 17:29	1
1,3,5-Trimethylbenzene	<0.25		1.0	0.25	ug/L			07/26/18 17:29	1
1,3-Dichlorobenzene	<0.40		1.0	0.40	ug/L			07/26/18 17:29	1
1,3-Dichloropropane	<0.36		1.0	0.36	ug/L			07/26/18 17:29	1
1,4-Dichlorobenzene	<0.36		1.0	0.36	ug/L			07/26/18 17:29	1
2,2-Dichloropropane	<0.44		1.0	0.44	ug/L			07/26/18 17:29	1
2-Butanone (MEK)	<2.1		5.0	2.1	ug/L			07/26/18 17:29	1
2-Chlorotoluene	<0.31		1.0	0.31	ug/L			07/26/18 17:29	1
4-Chlorotoluene	<0.35		1.0	0.35	ug/L			07/26/18 17:29	1
Acetone	6.7	cn	5.0	1.7	ug/L			07/26/18 17:29	1
Benzene	<0.15		0.50	0.15	ug/L			07/26/18 17:29	1
Bromobenzene	<0.36		1.0	0.36	ug/L			07/26/18 17:29	1
Bromochloromethane	<0.43		1.0	0.43	ug/L			07/26/18 17:29	1
Bromodichloromethane	<0.37		1.0	0.37	ug/L			07/26/18 17:29	1
Bromoform	<0.48		1.0	0.48	ug/L			07/26/18 17:29	1
Bromomethane	<0.80		2.0	0.80	ug/L			07/26/18 17:29	1
Carbon disulfide	<0.45		2.0	0.45	ug/L			07/26/18 17:29	1

TestAmerica Sacramento

Client Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: Bailer Blank

Lab Sample ID: 320-41248-9

Date Collected: 07/17/18 10:30

Matrix: Water

Date Received: 07/18/18 09:35

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			07/26/18 17:29	1
Chlorobenzene	<0.39		1.0	0.39	ug/L			07/26/18 17:29	1
Chloroethane	<0.51		1.0	0.51	ug/L			07/26/18 17:29	1
Chloroform	<0.37		2.0	0.37	ug/L			07/26/18 17:29	1
Chloromethane	<0.32		1.0	0.32	ug/L			07/26/18 17:29	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			07/26/18 17:29	1
cis-1,3-Dichloropropene	<0.42		1.0	0.42	ug/L			07/26/18 17:29	1
Dibromochloromethane	<0.49		1.0	0.49	ug/L			07/26/18 17:29	1
Dibromomethane	<0.27		1.0	0.27	ug/L			07/26/18 17:29	1
Dichlorodifluoromethane	<0.67		2.0	0.67	ug/L			07/26/18 17:29	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/26/18 17:29	1
Hexachlorobutadiene	<0.45		1.0	0.45	ug/L			07/26/18 17:29	1
Isopropyl ether	<0.28		1.0	0.28	ug/L			07/26/18 17:29	1
Isopropylbenzene	<0.39		1.0	0.39	ug/L			07/26/18 17:29	1
Methyl tert-butyl ether	<0.39		1.0	0.39	ug/L			07/26/18 17:29	1
Methylene Chloride	7.9	cn	5.0	1.6	ug/L			07/26/18 17:29	1
Naphthalene	<0.34		1.0	0.34	ug/L			07/26/18 17:29	1
n-Butylbenzene	<0.39		1.0	0.39	ug/L			07/26/18 17:29	1
N-Propylbenzene	<0.41		1.0	0.41	ug/L			07/26/18 17:29	1
p-Isopropyltoluene	<0.36		1.0	0.36	ug/L			07/26/18 17:29	1
sec-Butylbenzene	<0.40		1.0	0.40	ug/L			07/26/18 17:29	1
Styrene	<0.39		1.0	0.39	ug/L			07/26/18 17:29	1
tert-Butylbenzene	<0.40		1.0	0.40	ug/L			07/26/18 17:29	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			07/26/18 17:29	1
Tetrahydrofuran	<1.9		10	1.9	ug/L			07/26/18 17:29	1
Toluene	1.4		0.50	0.15	ug/L			07/26/18 17:29	1
trans-1,2-Dichloroethene	<0.35		1.0	0.35	ug/L			07/26/18 17:29	1
trans-1,3-Dichloropropene	<0.36		1.0	0.36	ug/L			07/26/18 17:29	1
Trichloroethene	<0.16		0.50	0.16	ug/L			07/26/18 17:29	1
Trichlorofluoromethane	<0.43		1.0	0.43	ug/L			07/26/18 17:29	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			07/26/18 17:29	1
Xylenes, Total	0.81	J	1.0	0.22	ug/L			07/26/18 17:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 126		07/26/18 17:29	1
4-Bromofluorobenzene (Surr)	101		72 - 124		07/26/18 17:29	1
Dibromofluoromethane	101		75 - 120		07/26/18 17:29	1
Toluene-d8 (Surr)	98		75 - 120		07/26/18 17:29	1

TestAmerica Sacramento

Surrogate Summary

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (75-126)	BFB (72-124)	DBFM (75-120)	TOL (75-120)
320-41248-1	B-7 0'-2'	81	99	83	98
320-41248-3	B-9 0'-2'	81	99	82	98
320-41248-5	B-11 6'-8'	84	97	83	99
320-41248-7	B-13 0'-2'	82	100	82	100
LCS 500-443007/4	Lab Control Sample	80	97	85	102
MB 500-443007/6	Method Blank	82	100	85	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (75-126)	BFB (72-124)	DBFM (75-120)	TOL (75-120)
320-41248-2	B-7 GW	97	101	100	98
320-41248-4	B-9 GW	93	102	101	99
320-41248-6	B-11 GW	95	102	101	97
320-41248-8	B-13 GW	96	102	102	96
320-41248-9	Bailer Blank	93	101	101	98
LCS 500-442551/5	Lab Control Sample	86	96	89	102
MB 500-442551/7	Method Blank	94	103	98	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane
TOL = Toluene-d8 (Surr)

Isotope Dilution Summary

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Solid

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		PFHxS (25-150)	PFHpA (25-150)	PFOA (25-150)	3C3-PFBs (25-150)	PFOS (25-150)	PFNA (25-150)
320-41248-1	B-7 0'-2'	86	97	84	73	79	90
320-41248-1 - RE	B-7 0'-2'					73	
320-41248-3	B-9 0'-2'	78	89	84	66	74	89
320-41248-5	B-11 6'-8'	80	96	86	69	74	89
320-41248-7	B-13 0'-2'	79	86	80	67	73	85
LCS 320-236262/2-A	Lab Control Sample	90	94	93	82	87	93
LCS 320-238635/2-A	Lab Control Sample					89	
MB 320-236262/1-A	Method Blank	89	93	88	77	86	93
MB 320-238635/1-A	Method Blank					90	

Surrogate Legend

PFHxS = 18O2 PFHxS
PFHpA = 13C4-PFHpA
PFOA = 13C4 PFOA
13C3-PFBS = 13C3-PFBS
PFOS = 13C4 PFOS
PFNA = 13C5 PFNA

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		PFHxS (25-150)	PFHpA (25-150)	PFOA (25-150)	3C3-PFBs (25-150)	PFOS (25-150)	PFNA (25-150)
320-41248-2	B-7 GW	36	36	38	37	33	39
320-41248-4	B-9 GW	75	73	77	71	72	78
320-41248-6	B-11 GW	55	58	56	54	52	55
320-41248-8	B-13 GW	56	54	56	53	57	61
LCS 320-235446/2-A	Lab Control Sample	96	100	98	101	100	97
LCSD 320-235446/3-A	Lab Control Sample Dup	98	99	105	104	96	102
MB 320-235446/1-A	Method Blank	93	95	97	92	97	99

Surrogate Legend

PFHxS = 18O2 PFHxS
PFHpA = 13C4-PFHpA
PFOA = 13C4 PFOA
13C3-PFBS = 13C3-PFBS
PFOS = 13C4 PFOS
PFNA = 13C5 PFNA

QC Sample Results

Client: Strand Associates, Inc.
 Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-442551/7
Matrix: Water
Analysis Batch: 442551

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<0.46		1.0	0.46	ug/L			07/26/18 10:43	1
1,1,1-Trichloroethane	<0.38		1.0	0.38	ug/L			07/26/18 10:43	1
1,1,2,2-Tetrachloroethane	<0.40		1.0	0.40	ug/L			07/26/18 10:43	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			07/26/18 10:43	1
1,1-Dichloroethane	<0.41		1.0	0.41	ug/L			07/26/18 10:43	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			07/26/18 10:43	1
1,1-Dichloropropene	<0.30		1.0	0.30	ug/L			07/26/18 10:43	1
1,2,3-Trichlorobenzene	<0.46		1.0	0.46	ug/L			07/26/18 10:43	1
1,2,3-Trichloropropane	<0.41		1.0	0.41	ug/L			07/26/18 10:43	1
1,2,4-Trichlorobenzene	<0.34		1.0	0.34	ug/L			07/26/18 10:43	1
1,2,4-Trimethylbenzene	<0.36		1.0	0.36	ug/L			07/26/18 10:43	1
1,2-Dibromo-3-Chloropropane	<2.0		5.0	2.0	ug/L			07/26/18 10:43	1
1,2-Dibromoethane	<0.39		1.0	0.39	ug/L			07/26/18 10:43	1
1,2-Dichlorobenzene	<0.33		1.0	0.33	ug/L			07/26/18 10:43	1
1,2-Dichloroethane	<0.39		1.0	0.39	ug/L			07/26/18 10:43	1
1,2-Dichloropropane	<0.43		1.0	0.43	ug/L			07/26/18 10:43	1
1,3,5-Trimethylbenzene	<0.25		1.0	0.25	ug/L			07/26/18 10:43	1
1,3-Dichlorobenzene	<0.40		1.0	0.40	ug/L			07/26/18 10:43	1
1,3-Dichloropropane	<0.36		1.0	0.36	ug/L			07/26/18 10:43	1
1,4-Dichlorobenzene	<0.36		1.0	0.36	ug/L			07/26/18 10:43	1
2,2-Dichloropropane	<0.44		1.0	0.44	ug/L			07/26/18 10:43	1
2-Butanone (MEK)	<2.1		5.0	2.1	ug/L			07/26/18 10:43	1
2-Chlorotoluene	<0.31		1.0	0.31	ug/L			07/26/18 10:43	1
4-Chlorotoluene	<0.35		1.0	0.35	ug/L			07/26/18 10:43	1
Acetone	<1.7		5.0	1.7	ug/L			07/26/18 10:43	1
Benzene	<0.15		0.50	0.15	ug/L			07/26/18 10:43	1
Bromobenzene	<0.36		1.0	0.36	ug/L			07/26/18 10:43	1
Bromochloromethane	<0.43		1.0	0.43	ug/L			07/26/18 10:43	1
Bromodichloromethane	<0.37		1.0	0.37	ug/L			07/26/18 10:43	1
Bromoform	<0.48		1.0	0.48	ug/L			07/26/18 10:43	1
Bromomethane	<0.80		2.0	0.80	ug/L			07/26/18 10:43	1
Carbon disulfide	<0.45		2.0	0.45	ug/L			07/26/18 10:43	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			07/26/18 10:43	1
Chlorobenzene	<0.39		1.0	0.39	ug/L			07/26/18 10:43	1
Chloroethane	<0.51		1.0	0.51	ug/L			07/26/18 10:43	1
Chloroform	<0.37		2.0	0.37	ug/L			07/26/18 10:43	1
Chloromethane	<0.32		1.0	0.32	ug/L			07/26/18 10:43	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			07/26/18 10:43	1
cis-1,3-Dichloropropene	<0.42		1.0	0.42	ug/L			07/26/18 10:43	1
Dibromochloromethane	<0.49		1.0	0.49	ug/L			07/26/18 10:43	1
Dibromomethane	<0.27		1.0	0.27	ug/L			07/26/18 10:43	1
Dichlorodifluoromethane	<0.67		2.0	0.67	ug/L			07/26/18 10:43	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/26/18 10:43	1
Hexachlorobutadiene	<0.45		1.0	0.45	ug/L			07/26/18 10:43	1
Isopropyl ether	<0.28		1.0	0.28	ug/L			07/26/18 10:43	1
Isopropylbenzene	<0.39		1.0	0.39	ug/L			07/26/18 10:43	1
Methyl tert-butyl ether	<0.39		1.0	0.39	ug/L			07/26/18 10:43	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			07/26/18 10:43	1

TestAmerica Sacramento

QC Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 500-442551/7

Matrix: Water

Analysis Batch: 442551

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Naphthalene	<0.34		1.0	0.34	ug/L			07/26/18 10:43	1
n-Butylbenzene	<0.39		1.0	0.39	ug/L			07/26/18 10:43	1
N-Propylbenzene	<0.41		1.0	0.41	ug/L			07/26/18 10:43	1
p-Isopropyltoluene	<0.36		1.0	0.36	ug/L			07/26/18 10:43	1
sec-Butylbenzene	<0.40		1.0	0.40	ug/L			07/26/18 10:43	1
Styrene	<0.39		1.0	0.39	ug/L			07/26/18 10:43	1
tert-Butylbenzene	<0.40		1.0	0.40	ug/L			07/26/18 10:43	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			07/26/18 10:43	1
Tetrahydrofuran	<1.9		10	1.9	ug/L			07/26/18 10:43	1
Toluene	<0.15		0.50	0.15	ug/L			07/26/18 10:43	1
trans-1,2-Dichloroethene	<0.35		1.0	0.35	ug/L			07/26/18 10:43	1
trans-1,3-Dichloropropene	<0.36		1.0	0.36	ug/L			07/26/18 10:43	1
Trichloroethene	<0.16		0.50	0.16	ug/L			07/26/18 10:43	1
Trichlorofluoromethane	<0.43		1.0	0.43	ug/L			07/26/18 10:43	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			07/26/18 10:43	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			07/26/18 10:43	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	94		75 - 126		07/26/18 10:43	1
4-Bromofluorobenzene (Surr)	103		72 - 124		07/26/18 10:43	1
Dibromofluoromethane	98		75 - 120		07/26/18 10:43	1
Toluene-d8 (Surr)	98		75 - 120		07/26/18 10:43	1

Lab Sample ID: LCS 500-442551/5

Matrix: Water

Analysis Batch: 442551

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	50.0	39.1		ug/L		78	70 - 125
1,1,2,2-Tetrachloroethane	50.0	50.3		ug/L		101	67 - 127
1,1,2-Trichloroethane	50.0	51.2		ug/L		102	70 - 122
1,1-Dichloroethane	50.0	43.8		ug/L		88	70 - 125
1,1-Dichloroethene	50.0	46.1		ug/L		92	67 - 122
1,1-Dichloropropene	50.0	44.7		ug/L		89	70 - 121
1,2,3-Trichlorobenzene	50.0	42.0		ug/L		84	55 - 140
1,2,3-Trichloropropane	50.0	48.1		ug/L		96	50 - 133
1,2,4-Trichlorobenzene	50.0	39.1		ug/L		78	66 - 127
1,2,4-Trimethylbenzene	50.0	48.8		ug/L		98	70 - 123
1,2-Dibromo-3-Chloropropane	50.0	40.6		ug/L		81	56 - 123
1,2-Dibromoethane	50.0	50.9		ug/L		102	70 - 125
1,2-Dichlorobenzene	50.0	47.0		ug/L		94	70 - 125
1,2-Dichloroethane	50.0	43.4		ug/L		87	68 - 127
1,2-Dichloropropane	50.0	44.4		ug/L		89	67 - 130
1,3,5-Trimethylbenzene	50.0	49.8		ug/L		100	70 - 123
1,3-Dichlorobenzene	50.0	47.8		ug/L		96	70 - 125
1,3-Dichloropropane	50.0	53.9		ug/L		108	62 - 136
1,4-Dichlorobenzene	50.0	48.5		ug/L		97	70 - 120

TestAmerica Sacramento

QC Sample Results

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 500-442551/5

Matrix: Water

Analysis Batch: 442551

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,2-Dichloropropane	50.0	35.5		ug/L		71	58 - 129
2-Butanone (MEK)	50.0	42.3		ug/L		85	53 - 141
2-Chlorotoluene	50.0	49.4		ug/L		99	70 - 125
4-Chlorotoluene	50.0	50.3		ug/L		101	68 - 124
Acetone	50.0	42.2		ug/L		84	40 - 143
Benzene	50.0	44.3		ug/L		89	70 - 120
Bromobenzene	50.0	46.0		ug/L		92	70 - 122
Bromochloromethane	50.0	42.1		ug/L		84	65 - 122
Bromodichloromethane	50.0	42.5		ug/L		85	69 - 120
Bromoform	50.0	45.3		ug/L		91	56 - 132
Bromomethane	50.0	50.8		ug/L		102	40 - 130
Carbon disulfide	50.0	47.3		ug/L		95	66 - 120
Carbon tetrachloride	50.0	40.8		ug/L		82	65 - 122
Chlorobenzene	50.0	48.5		ug/L		97	70 - 120
Chloroethane	50.0	39.3		ug/L		79	45 - 127
Chloroform	50.0	41.3		ug/L		83	70 - 120
Chloromethane	50.0	51.0		ug/L		102	54 - 147
cis-1,2-Dichloroethene	50.0	43.4		ug/L		87	70 - 125
cis-1,3-Dichloropropene	50.0	48.4		ug/L		97	64 - 127
Dibromochloromethane	50.0	48.2		ug/L		96	68 - 125
Dibromomethane	50.0	41.3		ug/L		83	70 - 120
Dichlorodifluoromethane	50.0	43.3		ug/L		87	40 - 150
Ethylbenzene	50.0	52.2		ug/L		104	70 - 120
Hexachlorobutadiene	50.0	42.2		ug/L		84	51 - 150
Isopropylbenzene	50.0	47.9		ug/L		96	70 - 126
Methyl tert-butyl ether	50.0	35.9		ug/L		72	70 - 120
Methylene Chloride	50.0	47.4		ug/L		95	69 - 125
Naphthalene	50.0	39.2		ug/L		78	59 - 130
n-Butylbenzene	50.0	51.6		ug/L		103	68 - 125
N-Propylbenzene	50.0	50.8		ug/L		102	69 - 127
p-Isopropyltoluene	50.0	50.6		ug/L		101	70 - 125
sec-Butylbenzene	50.0	50.4		ug/L		101	70 - 123
Styrene	50.0	50.3		ug/L		101	70 - 120
tert-Butylbenzene	50.0	49.0		ug/L		98	70 - 121
Tetrachloroethene	50.0	49.7		ug/L		99	70 - 128
Tetrahydrofuran	100	85.2		ug/L		85	59 - 139
Toluene	50.0	52.2		ug/L		104	70 - 125
trans-1,2-Dichloroethene	50.0	45.1		ug/L		90	70 - 125
trans-1,3-Dichloropropene	50.0	46.6		ug/L		93	62 - 128
Trichloroethene	50.0	42.8		ug/L		86	70 - 125
Trichlorofluoromethane	50.0	37.3		ug/L		75	70 - 126
Vinyl chloride	50.0	44.5		ug/L		89	64 - 126
Xylenes, Total	100	104		ug/L		104	70 - 125

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	86		75 - 126
4-Bromofluorobenzene (Surr)	96		72 - 124
Dibromofluoromethane	89		75 - 120

TestAmerica Sacramento

QC Sample Results

Client: Strand Associates, Inc.
 Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 500-442551/5
Matrix: Water
Analysis Batch: 442551

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	102		75 - 120

Lab Sample ID: MB 500-443007/6
Matrix: Solid
Analysis Batch: 443007

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<0.46		1.0	0.46	ug/Kg			07/30/18 10:49	1
1,1,1-Trichloroethane	<0.38		1.0	0.38	ug/Kg			07/30/18 10:49	1
1,1,2,2-Tetrachloroethane	<0.40		1.0	0.40	ug/Kg			07/30/18 10:49	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/Kg			07/30/18 10:49	1
1,1-Dichloroethane	<0.41		1.0	0.41	ug/Kg			07/30/18 10:49	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/Kg			07/30/18 10:49	1
1,1-Dichloropropene	<0.30		1.0	0.30	ug/Kg			07/30/18 10:49	1
1,2,3-Trichlorobenzene	<0.46		1.0	0.46	ug/Kg			07/30/18 10:49	1
1,2,3-Trichloropropane	<0.41		1.0	0.41	ug/Kg			07/30/18 10:49	1
1,2,4-Trichlorobenzene	<0.34		1.0	0.34	ug/Kg			07/30/18 10:49	1
1,2,4-Trimethylbenzene	<0.36		1.0	0.36	ug/Kg			07/30/18 10:49	1
1,2-Dibromo-3-Chloropropane	<2.0		5.0	2.0	ug/Kg			07/30/18 10:49	1
1,2-Dibromoethane	<0.39		1.0	0.39	ug/Kg			07/30/18 10:49	1
1,2-Dichlorobenzene	<0.33		1.0	0.33	ug/Kg			07/30/18 10:49	1
1,2-Dichloroethane	<0.39		1.0	0.39	ug/Kg			07/30/18 10:49	1
1,2-Dichloropropane	<0.43		1.0	0.43	ug/Kg			07/30/18 10:49	1
1,3,5-Trimethylbenzene	<0.38		1.0	0.38	ug/Kg			07/30/18 10:49	1
1,3-Dichlorobenzene	<0.40		1.0	0.40	ug/Kg			07/30/18 10:49	1
1,3-Dichloropropane	<0.36		1.0	0.36	ug/Kg			07/30/18 10:49	1
1,4-Dichlorobenzene	<0.36		1.0	0.36	ug/Kg			07/30/18 10:49	1
2,2-Dichloropropane	<0.44		1.0	0.44	ug/Kg			07/30/18 10:49	1
2-Chlorotoluene	<0.31		1.0	0.31	ug/Kg			07/30/18 10:49	1
4-Chlorotoluene	<0.35		1.0	0.35	ug/Kg			07/30/18 10:49	1
Benzene	<0.15		0.25	0.15	ug/Kg			07/30/18 10:49	1
Bromobenzene	<0.36		1.0	0.36	ug/Kg			07/30/18 10:49	1
Bromochloromethane	<0.43		1.0	0.43	ug/Kg			07/30/18 10:49	1
Bromodichloromethane	<0.37		1.0	0.37	ug/Kg			07/30/18 10:49	1
Bromoform	<0.48		1.0	0.48	ug/Kg			07/30/18 10:49	1
Bromomethane	<0.80		2.0	0.80	ug/Kg			07/30/18 10:49	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/Kg			07/30/18 10:49	1
Chlorobenzene	<0.39		1.0	0.39	ug/Kg			07/30/18 10:49	1
Chloroethane	<0.50		1.0	0.50	ug/Kg			07/30/18 10:49	1
Chloroform	<0.37		2.0	0.37	ug/Kg			07/30/18 10:49	1
Chloromethane	<0.32		1.0	0.32	ug/Kg			07/30/18 10:49	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/Kg			07/30/18 10:49	1
cis-1,3-Dichloropropene	<0.42		1.0	0.42	ug/Kg			07/30/18 10:49	1
Dibromochloromethane	<0.49		1.0	0.49	ug/Kg			07/30/18 10:49	1
Dibromomethane	<0.27		1.0	0.27	ug/Kg			07/30/18 10:49	1
Dichlorodifluoromethane	<0.67		2.0	0.67	ug/Kg			07/30/18 10:49	1
Ethylbenzene	<0.18		0.25	0.18	ug/Kg			07/30/18 10:49	1
Hexachlorobutadiene	<0.45		1.0	0.45	ug/Kg			07/30/18 10:49	1

TestAmerica Sacramento

QC Sample Results

Client: Strand Associates, Inc.
 Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 500-443007/6
Matrix: Solid
Analysis Batch: 443007

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropyl ether	<0.28		1.0	0.28	ug/Kg			07/30/18 10:49	1
Isopropylbenzene	<0.38		1.0	0.38	ug/Kg			07/30/18 10:49	1
Methyl tert-butyl ether	<0.39		1.0	0.39	ug/Kg			07/30/18 10:49	1
Methylene Chloride	<1.6		5.0	1.6	ug/Kg			07/30/18 10:49	1
Naphthalene	<0.33		1.0	0.33	ug/Kg			07/30/18 10:49	1
n-Butylbenzene	<0.39		1.0	0.39	ug/Kg			07/30/18 10:49	1
N-Propylbenzene	<0.41		1.0	0.41	ug/Kg			07/30/18 10:49	1
p-Isopropyltoluene	<0.36		1.0	0.36	ug/Kg			07/30/18 10:49	1
sec-Butylbenzene	<0.40		1.0	0.40	ug/Kg			07/30/18 10:49	1
Styrene	<0.39		1.0	0.39	ug/Kg			07/30/18 10:49	1
tert-Butylbenzene	<0.40		1.0	0.40	ug/Kg			07/30/18 10:49	1
Tetrachloroethene	<0.37		1.0	0.37	ug/Kg			07/30/18 10:49	1
Toluene	<0.15		0.25	0.15	ug/Kg			07/30/18 10:49	1
trans-1,2-Dichloroethene	<0.35		1.0	0.35	ug/Kg			07/30/18 10:49	1
trans-1,3-Dichloropropene	<0.36		1.0	0.36	ug/Kg			07/30/18 10:49	1
Trichloroethene	<0.16		0.50	0.16	ug/Kg			07/30/18 10:49	1
Trichlorofluoromethane	<0.43		1.0	0.43	ug/Kg			07/30/18 10:49	1
Vinyl chloride	<0.26		1.0	0.26	ug/Kg			07/30/18 10:49	1
Xylenes, Total	<0.22		0.50	0.22	ug/Kg			07/30/18 10:49	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		75 - 126		07/30/18 10:49	1
4-Bromofluorobenzene (Surr)	100		72 - 124		07/30/18 10:49	1
Dibromofluoromethane	85		75 - 120		07/30/18 10:49	1
Toluene-d8 (Surr)	100		75 - 120		07/30/18 10:49	1

Lab Sample ID: LCS 500-443007/4
Matrix: Solid
Analysis Batch: 443007

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	50.0	40.5		ug/Kg		81	70 - 125
1,1,1-Trichloroethane	50.0	45.2		ug/Kg		90	70 - 125
1,1,1,2,2-Tetrachloroethane	50.0	49.4		ug/Kg		99	67 - 127
1,1,1,2-Trichloroethane	50.0	45.8		ug/Kg		92	70 - 122
1,1-Dichloroethane	50.0	45.4		ug/Kg		91	70 - 125
1,1-Dichloroethene	50.0	45.8		ug/Kg		92	67 - 122
1,1-Dichloropropene	50.0	44.5		ug/Kg		89	70 - 121
1,2,3-Trichlorobenzene	50.0	37.0		ug/Kg		74	55 - 140
1,2,3-Trichloropropane	50.0	43.5		ug/Kg		87	50 - 133
1,2,4-Trichlorobenzene	50.0	39.8		ug/Kg		80	66 - 127
1,2,4-Trimethylbenzene	50.0	47.0		ug/Kg		94	70 - 123
1,2-Dibromo-3-Chloropropane	50.0	38.0		ug/Kg		76	56 - 123
1,2-Dibromoethane	50.0	45.1		ug/Kg		90	70 - 125
1,2-Dichlorobenzene	50.0	42.4		ug/Kg		85	70 - 125
1,2-Dichloroethane	50.0	38.4		ug/Kg		77	68 - 127
1,2-Dichloropropane	50.0	45.8		ug/Kg		92	67 - 130
1,3,5-Trimethylbenzene	50.0	47.9		ug/Kg		96	70 - 123

TestAmerica Sacramento

QC Sample Results

Client: Strand Associates, Inc.
 Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 500-443007/4
Matrix: Solid
Analysis Batch: 443007

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,3-Dichlorobenzene	50.0	43.1		ug/Kg		86	70 - 125
1,3-Dichloropropane	50.0	44.7		ug/Kg		89	62 - 136
1,4-Dichlorobenzene	50.0	42.1		ug/Kg		84	70 - 120
2,2-Dichloropropane	50.0	46.9		ug/Kg		94	58 - 129
2-Chlorotoluene	50.0	47.2		ug/Kg		94	70 - 125
4-Chlorotoluene	50.0	46.1		ug/Kg		92	68 - 124
Benzene	50.0	43.4		ug/Kg		87	70 - 120
Bromobenzene	50.0	45.1		ug/Kg		90	70 - 122
Bromochloromethane	50.0	40.3		ug/Kg		81	65 - 122
Bromodichloromethane	50.0	39.8		ug/Kg		80	69 - 120
Bromoform	50.0	39.6		ug/Kg		79	56 - 132
Bromomethane	50.0	55.0		ug/Kg		110	40 - 130
Carbon tetrachloride	50.0	42.7		ug/Kg		85	65 - 122
Chlorobenzene	50.0	43.7		ug/Kg		87	70 - 120
Chloroethane	50.0	50.9		ug/Kg		102	45 - 127
Chloroform	50.0	39.3		ug/Kg		79	70 - 120
Chloromethane	50.0	61.4		ug/Kg		123	54 - 147
cis-1,2-Dichloroethene	50.0	42.6		ug/Kg		85	70 - 125
cis-1,3-Dichloropropene	50.0	45.4		ug/Kg		91	64 - 127
Dibromochloromethane	50.0	42.7		ug/Kg		85	68 - 125
Dibromomethane	50.0	39.5		ug/Kg		79	70 - 120
Dichlorodifluoromethane	50.0	72.2		ug/Kg		144	40 - 150
Ethylbenzene	50.0	47.7		ug/Kg		95	70 - 120
Hexachlorobutadiene	50.0	47.4		ug/Kg		95	51 - 150
Isopropylbenzene	50.0	49.9		ug/Kg		100	70 - 126
Methyl tert-butyl ether	50.0	38.8		ug/Kg		78	70 - 120
Methylene Chloride	50.0	40.7		ug/Kg		81	69 - 125
Naphthalene	50.0	38.5		ug/Kg		77	59 - 130
n-Butylbenzene	50.0	52.4		ug/Kg		105	68 - 125
N-Propylbenzene	50.0	51.2		ug/Kg		102	69 - 127
p-Isopropyltoluene	50.0	48.6		ug/Kg		97	70 - 125
sec-Butylbenzene	50.0	51.4		ug/Kg		103	70 - 123
Styrene	50.0	45.2		ug/Kg		90	70 - 120
tert-Butylbenzene	50.0	48.0		ug/Kg		96	70 - 121
Tetrachloroethene	50.0	49.3		ug/Kg		99	70 - 128
Toluene	50.0	47.8		ug/Kg		96	70 - 125
trans-1,2-Dichloroethene	50.0	45.6		ug/Kg		91	70 - 125
trans-1,3-Dichloropropene	50.0	43.1		ug/Kg		86	62 - 128
Trichloroethene	50.0	43.5		ug/Kg		87	70 - 125
Trichlorofluoromethane	50.0	45.7		ug/Kg		91	70 - 126
Vinyl chloride	50.0	50.1		ug/Kg		100	64 - 126
Xylenes, Total	100	89.0		ug/Kg		89	70 - 125

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	80		75 - 126
4-Bromofluorobenzene (Surr)	97		72 - 124
Dibromofluoromethane	85		75 - 120
Toluene-d8 (Surr)	102		75 - 120

TestAmerica Sacramento

QC Sample Results

Client: Strand Associates, Inc.
 Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-235446/1-A
Matrix: Water
Analysis Batch: 235825

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 235446

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		07/23/18 06:36	07/24/18 02:48	1
Perfluorohexanesulfonic acid (PFHxS)	0.325	J	2.0	0.17	ng/L		07/23/18 06:36	07/24/18 02:48	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		07/23/18 06:36	07/24/18 02:48	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		07/23/18 06:36	07/24/18 02:48	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		07/23/18 06:36	07/24/18 02:48	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		07/23/18 06:36	07/24/18 02:48	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	93		25 - 150	07/23/18 06:36	07/24/18 02:48	1
13C4-PFHpA	95		25 - 150	07/23/18 06:36	07/24/18 02:48	1
13C4 PFOA	97		25 - 150	07/23/18 06:36	07/24/18 02:48	1
13C3-PFBS	92		25 - 150	07/23/18 06:36	07/24/18 02:48	1
13C4 PFOS	97		25 - 150	07/23/18 06:36	07/24/18 02:48	1
13C5 PFNA	99		25 - 150	07/23/18 06:36	07/24/18 02:48	1

Lab Sample ID: LCS 320-235446/2-A
Matrix: Water
Analysis Batch: 235825

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 235446

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorobutanesulfonic acid (PFBS)	35.4	33.5		ng/L		95	73 - 133
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.3		ng/L		91	63 - 123
Perfluoroheptanoic acid (PFHpA)	40.0	38.5		ng/L		96	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	37.3		ng/L		93	64 - 124
Perfluorooctanesulfonic acid (PFOS)	37.1	34.9		ng/L		94	67 - 127
Perfluorononanoic acid (PFNA)	40.0	39.8		ng/L		99	68 - 128

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
18O2 PFHxS	96		25 - 150
13C4-PFHpA	100		25 - 150
13C4 PFOA	98		25 - 150
13C3-PFBS	101		25 - 150
13C4 PFOS	100		25 - 150
13C5 PFNA	97		25 - 150

Lab Sample ID: LCSD 320-235446/3-A
Matrix: Water
Analysis Batch: 236590

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 235446

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Perfluorobutanesulfonic acid (PFBS)	35.4	32.2		ng/L		91	73 - 133	4	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.6		ng/L		89	63 - 123	2	30
Perfluoroheptanoic acid (PFHpA)	40.0	37.1		ng/L		93	66 - 126	4	30
Perfluorooctanoic acid (PFOA)	40.0	37.0		ng/L		92	64 - 124	1	30

TestAmerica Sacramento

QC Sample Results

Client: Strand Associates, Inc.
 Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-235446/3-A
Matrix: Water
Analysis Batch: 236590

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 235446

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
							Limits	RPD		
Perfluorooctanesulfonic acid (PFOS)	37.1	33.8		ng/L		91	67 - 127	3	30	
Perfluorononanoic acid (PFNA)	40.0	38.0		ng/L		95	68 - 128	4	30	
LCSD LCSD										
Isotope Dilution	%Recovery	Qualifier	Limits							
18O2 PFHxS	98		25 - 150							
13C4-PFHpA	99		25 - 150							
13C4 PFOA	105		25 - 150							
13C3-PFBS	104		25 - 150							
13C4 PFOS	96		25 - 150							
13C5 PFNA	102		25 - 150							

Lab Sample ID: MB 320-236262/1-A
Matrix: Solid
Analysis Batch: 237948

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 236262

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
										Perfluorobutanesulfonic acid (PFBS)
Perfluorohexanesulfonic acid (PFHxS)	<0.031		0.20	0.031	ug/Kg	07/26/18 09:48	08/04/18 04:30	1		
Perfluoroheptanoic acid (PFHpA)	<0.029		0.20	0.029	ug/Kg	07/26/18 09:48	08/04/18 04:30	1		
Perfluorooctanoic acid (PFOA)	<0.086		0.20	0.086	ug/Kg	07/26/18 09:48	08/04/18 04:30	1		
Perfluorooctanesulfonic acid (PFOS)	0.948		0.50	0.20	ug/Kg	07/26/18 09:48	08/04/18 04:30	1		
Perfluorononanoic acid (PFNA)	<0.036		0.20	0.036	ug/Kg	07/26/18 09:48	08/04/18 04:30	1		
MB MB										
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac		
18O2 PFHxS	89		25 - 150			07/26/18 09:48	08/04/18 04:30	1		
13C4-PFHpA	93		25 - 150			07/26/18 09:48	08/04/18 04:30	1		
13C4 PFOA	88		25 - 150			07/26/18 09:48	08/04/18 04:30	1		
13C3-PFBS	77		25 - 150			07/26/18 09:48	08/04/18 04:30	1		
13C4 PFOS	86		25 - 150			07/26/18 09:48	08/04/18 04:30	1		
13C5 PFNA	93		25 - 150			07/26/18 09:48	08/04/18 04:30	1		

Lab Sample ID: LCS 320-236262/2-A
Matrix: Solid
Analysis Batch: 237948

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 236262

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
							Limits	RPD		
Perfluorobutanesulfonic acid (PFBS)	1.77	1.84		ug/Kg		104	73 - 142			
Perfluorohexanesulfonic acid (PFHxS)	1.82	1.62		ug/Kg		89	75 - 121			
Perfluoroheptanoic acid (PFHpA)	2.00	1.85		ug/Kg		93	76 - 124			
Perfluorooctanoic acid (PFOA)	2.00	1.99		ug/Kg		99	76 - 121			
Perfluorooctanesulfonic acid (PFOS)	1.86	3.19 *		ug/Kg		172	69 - 131			
Perfluorononanoic acid (PFNA)	2.00	1.96		ug/Kg		98	74 - 126			
LCS LCS										
Isotope Dilution	%Recovery	Qualifier	Limits							
18O2 PFHxS	90		25 - 150							
13C4-PFHpA	94		25 - 150							

TestAmerica Sacramento

QC Sample Results

Client: Strand Associates, Inc.
 Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-236262/2-A
Matrix: Solid
Analysis Batch: 237948

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 236262

<i>Isotope Dilution</i>	<i>LCS LCS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C4 PFOA	93		25 - 150
13C3-PFBS	82		25 - 150
13C4 PFOS	87		25 - 150
13C5 PFNA	93		25 - 150

Lab Sample ID: MB 320-238635/1-A
Matrix: Solid
Analysis Batch: 239346

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 238635

<i>Analyte</i>	<i>MB MB</i>		<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>Result</i>	<i>Qualifier</i>							
Perfluorooctanesulfonic acid (PFOS)	<0.20		0.50	0.20	ug/Kg		08/08/18 06:33	08/10/18 20:43	1
<i>Isotope Dilution</i>	<i>MB MB</i>		<i>Limits</i>			<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFOS	<i>%Recovery</i>	<i>Qualifier</i>						08/08/18 06:33	08/10/18 20:43

Lab Sample ID: LCS 320-238635/2-A
Matrix: Solid
Analysis Batch: 239346

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 238635

<i>Analyte</i>	<i>LCS LCS</i>		<i>Spike Added</i>	<i>LCS Result</i>	<i>LCS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>							
Perfluorooctanesulfonic acid (PFOS)			1.86	1.77		ug/Kg		95	69 - 131
<i>Isotope Dilution</i>	<i>LCS LCS</i>								
13C4 PFOS	<i>%Recovery</i>	<i>Qualifier</i>							

QC Association Summary

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

GC/MS VOA

Analysis Batch: 442551

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-41248-2	B-7 GW	Total/NA	Water	8260B	
320-41248-4	B-9 GW	Total/NA	Water	8260B	
320-41248-6	B-11 GW	Total/NA	Water	8260B	
320-41248-8	B-13 GW	Total/NA	Water	8260B	
320-41248-9	Bailer Blank	Total/NA	Water	8260B	
MB 500-442551/7	Method Blank	Total/NA	Water	8260B	
LCS 500-442551/5	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 443007

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-41248-1	B-7 0'-2'	Total/NA	Solid	8260B	443097
320-41248-3	B-9 0'-2'	Total/NA	Solid	8260B	443097
320-41248-5	B-11 6'-8'	Total/NA	Solid	8260B	443097
320-41248-7	B-13 0'-2'	Total/NA	Solid	8260B	443097
MB 500-443007/6	Method Blank	Total/NA	Solid	8260B	
LCS 500-443007/4	Lab Control Sample	Total/NA	Solid	8260B	

Prep Batch: 443097

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-41248-1	B-7 0'-2'	Total/NA	Solid	5035	
320-41248-3	B-9 0'-2'	Total/NA	Solid	5035	
320-41248-5	B-11 6'-8'	Total/NA	Solid	5035	
320-41248-7	B-13 0'-2'	Total/NA	Solid	5035	

LCMS

Prep Batch: 235446

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-41248-2	B-7 GW	Total/NA	Water	3535	
320-41248-4	B-9 GW	Total/NA	Water	3535	
320-41248-6	B-11 GW	Total/NA	Water	3535	
320-41248-8	B-13 GW	Total/NA	Water	3535	
MB 320-235446/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-235446/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-235446/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 235825

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-41248-4	B-9 GW	Total/NA	Water	537 (modified)	235446
320-41248-6	B-11 GW	Total/NA	Water	537 (modified)	235446
320-41248-8	B-13 GW	Total/NA	Water	537 (modified)	235446
MB 320-235446/1-A	Method Blank	Total/NA	Water	537 (modified)	235446
LCS 320-235446/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	235446

Prep Batch: 236262

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-41248-1	B-7 0'-2'	Total/NA	Solid	SHAKE	
320-41248-3	B-9 0'-2'	Total/NA	Solid	SHAKE	
320-41248-5	B-11 6'-8'	Total/NA	Solid	SHAKE	
320-41248-7	B-13 0'-2'	Total/NA	Solid	SHAKE	

TestAmerica Sacramento

QC Association Summary

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

LCMS (Continued)

Prep Batch: 236262 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-236262/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-236262/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Analysis Batch: 236590

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-41248-2	B-7 GW	Total/NA	Water	537 (modified)	235446
LCS 320-235446/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	235446

Analysis Batch: 237948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-41248-1	B-7 0'-2'	Total/NA	Solid	537 (modified)	236262
320-41248-3	B-9 0'-2'	Total/NA	Solid	537 (modified)	236262
320-41248-5	B-11 6'-8'	Total/NA	Solid	537 (modified)	236262
320-41248-7	B-13 0'-2'	Total/NA	Solid	537 (modified)	236262
MB 320-236262/1-A	Method Blank	Total/NA	Solid	537 (modified)	236262
LCS 320-236262/2-A	Lab Control Sample	Total/NA	Solid	537 (modified)	236262

Prep Batch: 238635

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-41248-1 - RE	B-7 0'-2'	Total/NA	Solid	SHAKE	
MB 320-238635/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-238635/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Analysis Batch: 239346

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-41248-1 - RE	B-7 0'-2'	Total/NA	Solid	537 (modified)	238635
MB 320-238635/1-A	Method Blank	Total/NA	Solid	537 (modified)	238635
LCS 320-238635/2-A	Lab Control Sample	Total/NA	Solid	537 (modified)	238635

General Chemistry

Analysis Batch: 235183

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-41248-1	B-7 0'-2'	Total/NA	Solid	D 2216	
320-41248-3	B-9 0'-2'	Total/NA	Solid	D 2216	
320-41248-5	B-11 6'-8'	Total/NA	Solid	D 2216	
320-41248-7	B-13 0'-2'	Total/NA	Solid	D 2216	

TestAmerica Sacramento

Lab Chronicle

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-7 0'-2'
Date Collected: 07/16/18 09:50
Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			235183	07/20/18 12:10	TCS	TAL SAC

Client Sample ID: B-7 0'-2'
Date Collected: 07/16/18 09:50
Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-1
Matrix: Solid
Percent Solids: 85.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.3068 g	5 mL	443097	07/30/18 11:41	DJD	TAL CHI
Total/NA	Analysis	8260B		50	5 mL	5 mL	443007	07/30/18 14:54	JJH	TAL CHI
Total/NA	Prep	SHAKE			5.10 g	10.00 mL	236262	07/26/18 09:48	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1			237948	08/04/18 07:22	S1M	TAL SAC
Total/NA	Prep	SHAKE	RE		5.07 g	10.00 mL	238635	08/08/18 06:33	HJA	TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			239346	08/10/18 21:30	S1M	TAL SAC

Client Sample ID: B-7 GW
Date Collected: 07/17/18 10:45
Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	442551	07/26/18 15:33	JDD	TAL CHI
Total/NA	Prep	3535			296.7 mL	10.00 mL	235446	07/23/18 06:36	SK	TAL SAC
Total/NA	Analysis	537 (modified)		1			236590	07/27/18 13:55	S1M	TAL SAC

Client Sample ID: B-9 0'-2'
Date Collected: 07/16/18 13:00
Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			235183	07/20/18 12:10	TCS	TAL SAC

Client Sample ID: B-9 0'-2'
Date Collected: 07/16/18 13:00
Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-3
Matrix: Solid
Percent Solids: 87.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.0883 g	5 mL	443097	07/30/18 11:41	DJD	TAL CHI
Total/NA	Analysis	8260B		50	5 mL	5 mL	443007	07/30/18 15:21	JJH	TAL CHI
Total/NA	Prep	SHAKE			5.05 g	10.00 mL	236262	07/26/18 09:48	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1			237948	08/04/18 07:30	S1M	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-9 GW

Date Collected: 07/17/18 14:30

Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	442551	07/26/18 16:02	JDD	TAL CHI
Total/NA	Prep	3535			312.5 mL	10.00 mL	235446	07/23/18 06:36	SK	TAL SAC
Total/NA	Analysis	537 (modified)		1			235825	07/24/18 04:33	S1M	TAL SAC

Client Sample ID: B-11 6'-8'

Date Collected: 07/16/18 15:30

Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-5

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			235183	07/20/18 12:10	TCS	TAL SAC

Client Sample ID: B-11 6'-8'

Date Collected: 07/16/18 15:30

Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-5

Matrix: Solid

Percent Solids: 91.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.2713 g	5 mL	443097	07/30/18 11:41	DJD	TAL CHI
Total/NA	Analysis	8260B		50	5 mL	5 mL	443007	07/30/18 15:49	JJH	TAL CHI
Total/NA	Prep	SHAKE			5.08 g	10.00 mL	236262	07/26/18 09:48	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1			237948	08/04/18 07:38	S1M	TAL SAC

Client Sample ID: B-11 GW

Date Collected: 07/17/18 10:00

Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	442551	07/26/18 16:31	JDD	TAL CHI
Total/NA	Prep	3535			306.9 mL	10.00 mL	235446	07/23/18 06:36	SK	TAL SAC
Total/NA	Analysis	537 (modified)		1			235825	07/24/18 04:40	S1M	TAL SAC

Client Sample ID: B-13 0'-2'

Date Collected: 07/17/18 12:15

Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-7

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			235183	07/20/18 12:10	TCS	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Client Sample ID: B-13 0'-2'

Date Collected: 07/17/18 12:15

Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-7

Matrix: Solid

Percent Solids: 82.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.7302 g	5 mL	443097	07/30/18 11:41	DJD	TAL CHI
Total/NA	Analysis	8260B		50	5 mL	5 mL	443007	07/30/18 16:16	JJH	TAL CHI
Total/NA	Prep	SHAKE			5.03 g	10.00 mL	236262	07/26/18 09:48	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1			237948	08/04/18 07:46	S1M	TAL SAC

Client Sample ID: B-13 GW

Date Collected: 07/17/18 13:30

Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	442551	07/26/18 17:00	JDD	TAL CHI
Total/NA	Prep	3535			292.3 mL	10.00 mL	235446	07/23/18 06:36	SK	TAL SAC
Total/NA	Analysis	537 (modified)		1			235825	07/24/18 04:48	S1M	TAL SAC

Client Sample ID: Bailer Blank

Date Collected: 07/17/18 10:30

Date Received: 07/18/18 09:35

Lab Sample ID: 320-41248-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	442551	07/26/18 17:29	JDD	TAL CHI

Laboratory References:

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Laboratory: TestAmerica Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
ANAB	DoD ELAP		L2468	01-20-21
Arizona	State Program	9	AZ0708	08-11-19
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-19
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-19
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-19
Kansas	NELAP	7	E-10375	10-31-18
Louisiana	NELAP	6	30612	06-30-19
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-19
New Hampshire	NELAP	1	2997	04-18-19
New Jersey	NELAP	2	CA005	06-30-19
New York	NELAP	2	11666	03-31-19
Oregon	NELAP	10	4040	01-29-19
Pennsylvania	NELAP	3	68-01272	03-31-19
Texas	NELAP	6	T104704399	05-31-19
US Fish & Wildlife	Federal		LE148388-0	07-31-19
USDA	Federal		P330-18-00239	01-17-21
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-19
Vermont	State Program	1	VT-4040	04-30-19
Virginia	NELAP	3	460278	03-14-19
Washington	State Program	10	C581	05-05-19
West Virginia (DW)	State Program	3	9930C	12-31-18
Wyoming	State Program	8	8TMS-L	01-28-19

Laboratory: TestAmerica Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	999580010	08-31-19

Method Summary

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CHI
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC
5030B	Purge and Trap	SW846	TAL CHI
5035	Closed System Purge and Trap	SW846	TAL CHI
SHAKE	Shake Extraction with Ultrasonic Bath Extraction	SW846	TAL SAC

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Strand Associates, Inc.
Project/Site: MMSD NE Interceptor - 1021.021

TestAmerica Job ID: 320-41248-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-41248-1	B-7 0'-2'	Solid	07/16/18 09:50	07/18/18 09:35
320-41248-2	B-7 GW	Water	07/17/18 10:45	07/18/18 09:35
320-41248-3	B-9 0'-2'	Solid	07/16/18 13:00	07/18/18 09:35
320-41248-4	B-9 GW	Water	07/17/18 14:30	07/18/18 09:35
320-41248-5	B-11 6'-8'	Solid	07/16/18 15:30	07/18/18 09:35
320-41248-6	B-11 GW	Water	07/17/18 10:00	07/18/18 09:35
320-41248-7	B-13 0'-2'	Solid	07/17/18 12:15	07/18/18 09:35
320-41248-8	B-13 GW	Water	07/17/18 13:30	07/18/18 09:35
320-41248-9	Bailer Blank	Water	07/17/18 10:30	07/18/18 09:35



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

2417 Bond Street, University Park, IL 60484
Phone: 708.534.5200 Fax: 708.534.5211

Report To (optional) Steve Small
 Contact: Steve Small
 Company: Strand Associates, Inc
 Address: 910 W. Wingra Dr.
Madison, WI 53715
 Phone: 608-251-4843
 Fax: _____
 E-Mail: Steve_small@strand.com

Bill To (optional) _____
 Contact: _____
 Company: MMSD
 Address: _____
 Phone: _____
 Fax: _____
 PO#/Reference# See Sandie Frederick for details

Chain of Custody Record

Lab Job #: _____

Chain of Custody Number: _____

Page _____ of _____

Temperature °C of Cooler: _____

Client		Client Project #		Preservative		Parameter										Preservative Key
Strand/MMSD		1021.021		MeOH HCL		None None None None None None										1. HCL, Cool to 4° 2. H2SO4, Cool to 4° 3. HNO3, Cool to 4° 4. NaOH, Cool to 4° 5. NaOH/Zn, Cool to 4° 6. NaHSO4 7. Cool to 4° 8. None 9. Other
Project Name		Lab Project #		Containers		Matrix										Comments
MMSD NE Interceptor				# of		VOC (Gen) VOC (Con) PFOS PFOA PFBS PFHxA PFHxS PFNA										
Project Location/State		Lab PM		Matrix												
Madison, WI		Sandie Frederick		V												
Sample		Sampling		Matrix												
Steve Small (Strand)		Date Time <td colspan="2">W</td> <td colspan="10"></td> <td colspan="1"></td>		W												
Lab ID	MS/MSD	Sample ID	Date	Time	# of Containers	Matrix	VOC (Gen)	VOC (Con)	PFOS	PFOA	PFBS	PFHxA	PFHxS	PFNA	Comments	
		B-7 0-2'	7-16-18	9:50	3 S	S	X		X	X	X	X	X	X	PID=511 ppm	
		B-7 GW	7-17-18	10:45	5 W	W		X	X	X	X	X	X	X	-	
		B-9 0-2'	7-16-18	13:00	3 S	S	X		X	X	X	X	X	X	PID=195 ppm	
		B-9 GW	7-17-18	14:30	5 W	W		X	X	X	X	X	X	X	-	
		B-11 6-8'	7-16-18	15:30	3 S	S	X		X	X	X	X	X	X	PID=6659 ppm	
		B-11 GW	7-17-18	10:00	5 W	W		X	X	X	X	X	X	X	-	
		B-13 0-2'	7-17-18	12:15	3 S	S	X		X	X	X	X	X	X	PID=583 ppm	
		B-13 GW	7-17-18	13:30	5 W	W		X	X	X	X	X	X	X	-	
		Boiler Blank	7-17-18	10:30	3 W	W		X							-	

Page 44 of 47

Turnaround Time Required (Business Days) Normal
 Requested Due Date: _____
 Sample Disposal: Return to Client Disposal by Lab Archive for _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Relinquished By: <u>[Signature]</u> Company: <u>Strand</u> Date: <u>7/17/18</u> Time: _____	Received By: <u>[Signature]</u> Company: <u>TA-SAC</u> Date: <u>7/18/18</u> Time: <u>0955</u>	Lab Courier: _____
Relinquished By: _____ Company: _____ Date: _____ Time: _____	Received By: _____ Company: _____ Date: _____ Time: _____	Shipped: _____
Relinquished By: _____ Company: _____ Date: _____ Time: _____	Received By: _____ Company: _____ Date: _____ Time: _____	Hand Delivered: _____

Matrix Key:
 WW - Wastewater SE - Sediment
 W - Water SO - Soil
 S - Soil L - Leachate
 SL - Sludge WI - Wipe
 MS - Miscellaneous DW - Drinking Water
 OL - Oil O - Other
 A - Air

Client Comments: mmsd is to be billed for - two services. Please send

Lab Comments: 0.0% ice ALK-5



320-41248 Chain of Custody

9/11/2018 (Rev. 1)

* Received 1/3 via w/ headspace larger than 6mm bubble. EC 7/18/18



TestAmerica Sacramento

880 Riverside Parkway
West Sacramento, CA 95605
Phone (916) 373-5600 Fax (916) 372-1059

Chain of Custody Record



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)		Sampler:		Lab PM: Fredrick, Sandie J		Carrier Tracking No(s):		COC No: 320-124263.1					
Client Contact: Shipping/Receiving		Phone:		E-Mail: sandie.fredrick@testamericainc.com		State of Origin: Wisconsin		Page: Page 1 of 1					
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Wisconsin		Job #: 320-41248-1		Preservation Codes:							
Address: 2417 Bond Street,		Due Date Requested: 7/26/2018		Analysis Requested						A - HCL		M - Hexane	
City: University Park		TAT Requested (days):								B - NaOH		N - None	
State, Zip: IL, 60484		PO #:		C - Zn Acetate		O - AsNaO2		D - Nitric Acid		P - Na2O4S			
Phone: 708-534-5200(Tel) 708-534-5211(Fax)		WO #:		E - NaHSO4		Q - Na2SO3		F - MeOH		R - Na2S2O3			
Email:		Project #: 50006641		G - Amchlor		S - H2SO4		H - Ascorbic Acid		T - TSP Dodecahydrate			
Project Name: MMSD NE Interceptor - 1021.021		SSOW#:		I - Ice		U - Acetone		J - DI Water		V - MCAA			
Site:		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		8260B/5035A_FM VOCs - Wisconsin		K - EDTA		W - pH 4-5			
						8260B/5030B (MOD) VOCs - Wisconsin		L - EDA		Z - other (specify)			
								Other:					
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)		Total Number of Containers		Special Instructions/Note:	
B-7 0'-2' (320-41248-1)		7/16/18		09:50 Central		Solid		Solid		1			
B-7 GW (320-41248-2)		7/17/18		10:45 Central		Water		Water		2			
B-9 0'-2' (320-41248-3)		7/16/18		13:00 Central		Solid		Solid		1			
B-9 GW (320-41248-4)		7/17/18		14:30 Central		Water		Water		2			
B-11 6'-8' (320-41248-5)		7/16/18		15:30 Central		Solid		Solid		1			
B-11 GW (320-41248-6)		7/17/18		10:00 Central		Water		Water		2			
B-13 0'-2' (320-41248-7)		7/17/18		12:15 Central		Solid		Solid		1			
B-13 GW (320-41248-8)		7/17/18		13:30 Central		Water		Water		2			
Bailer Blank (320-41248-9)		7/17/18		10:30 Central		Water		Water		3			
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>													
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)							
Unconfirmed						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months							
Deliverable Requested: I, II, III, IV, Other (specify)						Special Instructions/QC Requirements:							
Primary Deliverable Rank: 2													
Empty Kit Relinquished by:			Date:			Time:			Method of Shipment:				
Relinquished by: <i>[Signature]</i>			Date/Time: 7-19-18 1630			Company: <i>[Signature]</i>			Received by: <i>[Signature]</i>				
Relinquished by:			Date/Time:			Company:			Received by:				
Relinquished by:			Date/Time:			Company:			Received by:				
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No			Custody Seal No.:			Cooler Temperature(s) °C and Other Remarks: 116 → 3.1							

Login Sample Receipt Checklist

Client: Strand Associates, Inc.

Job Number: 320-41248-1

Login Number: 41248

List Source: TestAmerica Sacramento

List Number: 1

Creator: Her, David A

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	094077
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	False	Headspace larger than 1/4" in one or more vials, one vial with accpt. headspace
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Strand Associates, Inc.

Job Number: 320-41248-1

Login Number: 41248
List Number: 2
Creator: Scott, Sherri L

List Source: TestAmerica Chicago
List Creation: 07/20/18 02:17 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	

